Systems

IBM 3270
Information Display System

3274 Control Unit
Planning, Setup, and
Customizing Guide

Validation Number 09

IBM

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Information Display System**

**3274 Control Unit
Planning, Setup, and
Customizing Guide**

Validation Number 09

For Configuration Support Levels A,B,C,T;
For 3274 Control Unit Models 1-A,-B,-C,-D;
21-A,-B,-C,-D; 31-A,-C,-D; and 51C

IBM

Federal Communications Commission (FCC) Statement

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

IBM Statement

This warning is also applicable to all attaching units produced for use in the U.S.A. that have been manufactured after December 31, 1980. A notice of compliance has been affixed within the customer access area of all affected units.

Preface

This guide is written for customer personnel who are responsible for planning the installation of the IBM 3274 Control Unit. This guide is organized into six chapters and ten appendixes as follows:

Chapter 1, "Planning Your Installation," provides site planning information for your 3274 installation.

Chapter 2, "Introduction to Customizing," describes the customizing operation and how and by whom the 3274 customizing procedure is performed.

Chapter 3, "Preparing to Customize," describes the sequence numbers used in the 3274 customizing procedure. These sequence numbers are associated with functions and features of the 3274 and guide you through the customizing procedure. They are grouped by 3274 model number.

Chapter 4, "Initial Customizing Procedure," describes how to perform the initial customizing of the 3274.

Chapter 5, "Modification Procedure," describes how a 3274 configuration can be modified without performing the entire customizing procedure.

Chapter 6, "Backup Diskette Generation Procedure," describes how to generate a backup (duplicate) system or load diskette. You can use this procedure if you wish to create a duplicate of your system or load diskette.

Appendix A, "Planning Checklist," provides a suggested checklist to help you plan your installation.

Appendix B, "3274 Device Cables," provides cable attachment information, and also channel attachment information for the 3274 Models 1A, 1B, 1D, 21A, 21B, 21D, 31A, and 31D.

Appendix C, "Printer Authorization Matrix," describes the printer authorization matrix and how to define it. You will need to refer to this appendix if you wish to use this function.

Appendix D, "Subsystem Verification Procedure," describes a procedure for verifying the 3274 subsystem after initial microcode load (IML) is performed.

Appendix E, "Color Convergence Procedure," describes a procedure for converging the color patterns on the 3279 Color Display Station during customizing.

Appendix F, "3274 Communication Cables," provides cabling information for Models 1C, 21C, 31C, and 51C and shows adapters for modem connections.

Appendix G, "Planning for 3274 Model 31C Modem Address Switch Settings," tells you how to set the Modem Address switches if you have a 3274 Model 31C with an integrated modem.

Appendix H, "Planning for 3274 Model 51C Switch Settings," tells you how to set the Transmit Level, Line Speed, or Modem Address switches if you have a 3274 Model 51C.

Appendix I, "3274 Control Storage Requirements," describes how to determine control storage requirements for each model of the 3274.

Appendix J, "Multiple Interactive Screen Definition—Sequence Number 171," describes how to identify 3290 multiple interactive screens using sequence number 171.

Following the appendixes are a list of abbreviations used in this manual and an index.

For detailed information about the functions and features of the above 3270 Information Display System units, see the latest editions of:

- *An Introduction to the IBM 3270 Information Display System*, GA27-2739, which describes the 3270 hardware units and capabilities, lists programming support, and suggests typical applications.

- *IBM 3270 Information Display System: 3274 Control Unit Description and Programmer's Guide*, GA23-0061, which provides system level information regarding the functional and programming characteristics of the 3274 Control Unit and attached terminals.

- *IBM 3270 Information Display System: Installation Manual—Physical Planning*, GA27-2787, which provides physical planning information for the 3270 units, including floor planning, electrical and environmental requirements, cabling, and machine specifications and descriptions.

- *IBM 3270 Information Display System: Feature Description*, GA23-0113, which describes the features available for the 3270 display system units and contains detailed feature lists and feature numbers.

See the *IBM 3270 Information Display System Library User's Guide*, GA23-0058, for a complete list of 3270 manuals.

Contents

Figures

|Summary of Changes

1. Support has been added for:

   3178 Display Station
   3290 Information Panel Display Station
   5210 Printer Models G01 and G02
   IBM 3270 Personal Computer Attachment

2. The following sequence numbers have been added:

   114 — IBM Personal Computer Attachment
   170 — 3290
   171 — Multiple Interactive Screens
   173 — 3290 Options
   175 — Password
   176 — BSC Enhanced Communications Option

3. Changes have been made to the "Initial Customizing Procedure," the "Modification Procedure," and the "Backup Diskette Generation Procedures" to accommodate the addition of the items listed in 1, above.

4. Chapter 6, "Backup System Diskette Generation Procedure," has been renamed "Backup Diskette Generation Procedures," and broken into two parts; one for backup system diskettes, and one for backup load diskettes.

5. Chapter 7, "Update-Diskette Installation Procedure," has been removed.

6. Appendix J, "Multiple Interactive Screen Definition—Sequence Number 171," has been added.

Chapter 1. Planning Your Installation

Introduction

This guide will help you plan the installation of the IBM 3274 Control Unit, Models 1A, 1B, 1C, 1D, 21A, 21B, 21C, 21D, 31A, 31C, 31D, and 51C. These models may be divided into two groups: those that are locally attached via a channel to the host and those that are remotely attached through communication facilities to the host.

Local-channel-attached models are:

- 1A, 21A, and 31A

- 1B and 21B

- 1D, 21D, and 31D

Remotely attached models are:

- 1C, 21C, 31C, and 51C

Terminals that can attach to the 3274 Control Unit are:

- IBM 3178 Display Station

- IBM 3230 Printer Model 2

- IBM 3262 Line Printer Models 3 and 13

- IBM 3268 Printer Model 2

- IBM 3277 Display Station Models 1 and 2

- IBM 3278 Display Station Models 1 through 5

- IBM 3279 Color Display Station Models 2A, 2B, 3A, and 3B

- IBM 3284 Printer Models 1 and 2

- IBM 3286 Printer Models 1 and 2

- IBM 3287 Printer Models 1, 1C, 2, and 2C

- IBM 3288 Line Printer Model 2

- IBM 3289 Line Printer Models 1 and 2

- IBM 3290 Information Panel Display Station

- IBM 5210 Printer Models G01 and G02

Note: 3274 customizing information required when an IBM 3270 Personal Computer Attachment is to be used in conjunction with an IBM 3278 Display Station is included in this guide.

All models of the 3274, as well as the terminals that connect to it, are delivered with unpacking instructions attached to an outside surface of the shipping carton. In addition to the unpacking instructions, the 3274 Models 1C, 21C, 31C, and 51C, and all terminals, have setup instructions inside the shipping carton. The unpacking instructions and the setup instructions are step-by-step procedures that describe the unpacking and setup tasks for the unit. Once the 3274 is set up, it must be customized for your unique configuration. Instructions on what you must plan for and how to customize your 3274 are given in Chapter 2 of this manual.

System Planning

The following tasks should be planned so that they can be accomplished in a timely manner:

- Site preparation for the 3274 subsystem

- Communication facilities preparation for remote attachment of the 3274 Control Unit

- Host system channel preparation for local attachment of the 3274 Control Unit

- Programming support preparation

- 3274 predelivery planning activities

It may be useful to assign a person in your organization the responsibility of ensuring that all these tasks are planned. The Planning Checklist in Appendix A of this guide contains the events, in a suggested sequence, that should be planned in order to install a locally attached model, and/or set up a remotely attached model, of the 3274 for the first time; it therefore contains more detail than is required for adding to or replacing an existing subsystem. In either case, each event should be carefully considered so that installation and/or setup is problem-free.

Site Preparation

The specifications for all physical requirements of the 3178, 3230, 3262, 3268, 3274, 3278, 3279, 3287, 3289, 3290, and 5210 units are given in *IBM 3270 Information Display System: Installation Manual—Physical Planning,* GA27-2787.

This guide will help you provide compatibility between these units and the following:

- Work-space considerations

- Electrical requirements

- Cable requirements and installation

- Power cord plug requirements

- Environmental requirements

Communication Services (3274 Models 1C, 21C, 31C, and 51C)

Arrangements need to be made for the installation of the communication facilities between the remotely attached models of the 3274 and the host communication unit/adapter. There must be compatibility between the 3274, the modems, the communication line, and the communication unit/adapter; for example, line speed, duplex or half-duplex facilities, and nonreturn to zero (NRZ) or nonreturn to zero inverted (NRZI).

Compatibility among these components is a major consideration. To reduce delays caused by incompatibility, it is recommended that you request assistance from your communication representative and from your IBM representative to determine whether the 3274, modems, communication line, and communication unit/adapter are compatible. In addition, schedules should be established to ensure that the modems, communication line, and communication unit/adapter are installed and tested before delivery of the 3274 and the attached units.

Local Channel Attachment (3274 Models 1A, 1B, 1D, 21A, 21B, 21D, 31A, and 31D)

A plan needs to be established for required changes to your host system selector, multiplexer, or block multiplexer channel configuration. Considerations should include device priorities, device data rates, device addresses, I/O interface cable lengths, and changes to the sequence and control (power sequencing and emergency power off) cables.

The Channel Attachment Information Form in Appendix B should be completed before the 3274 is delivered. This information will be required by the IBM service representative at the time of installation. The following information will assist you in completing the form. For further information, see the *IBM System/370 Installation Manual—Physical Planning*, GC22-7004. These models may be attached to a byte multiplexer, block multiplexer, or selector channel. In most cases the choice of channel attachment depends on system considerations such as channel utilization rather than 3274 operation.

Selector or Block Multiplexer Channel (Non-Byte Mode Operation)

If you choose to attach these models to a block multiplexer or selector channel, the following options should be selected:

- Select the 100-kb data rate (for the A models only).

- Select burst mode for the A models. No selection is required for the B and D models.

- Select the priority that will produce the greatest channel efficiency with other attached devices. Factory wiring of high priority is recommended.

The 3274 Models A, B, and D are designed to operate with disconnect command chaining (DCC). Depending on the processor being used, maximum channel utilization can be gained by proper specification of the unit control word (UCW) in the host. Consult your IBM Systems Engineer to find out if a shared or nonshared UCW should be specified. Also, see the latest version of *IBM System/370 Input/Output Configurator*, GA22-7002.

If you choose to attach these models to a byte multiplexer channel, the following selections should be made:

- Select the correct mode as follows:

  - Select byte mode for the A models.

  - Select burst mode for the B and D models only if the 3274 is the only device on the channel. In all other cases, select byte mode.

- Select a priority that is below all overrunnable devices on the channel. This can be accomplished by channel cabling between devices and/or the channel priority options.

- On the A models, select the data rate that will produce maximum channel utilization with other devices attached to the same channel. There is no data rate selection option on the B and D models.

When choosing a control unit address for the A models of the 3274, you may use any one of the 256 possible addresses.

The B and D models are very similar to the 3272. The hexadecimal address of the control unit must be a multiple of hex 10 (hex 00, hex 10, hex 20, etc.). If more than 16 devices are attached, the control unit address must be a multiple of hex 20 (hex 00, hex 20, hex 40, etc.).

The B and D models also require an address range. Calculate the number of contiguous addresses as follows:

8 x Number of Type A Terminal Adapters +
4 x Number of Type B Terminal Adapters

For example, a control unit address of hex 20 with two Type A Terminal Adapters and three Type B Terminal Adapters would be 16 + 12 = 28. Therefore, 28 is the number of contiguous addresses. The 3274 B and D models will then respond to addresses hex 20 through hex 3B.

Programming Support

It is important to plan for proper programming support at the host system. The 3274 clusters can be added to most 3270 display/printer systems with minimal impact on the existing programs. In certain cases, however, host system definition (SYSGEN) parameters will have to be changed to accommodate attachment of a 3274 cluster. Information on programming requirements is given in *IBM 3270 Information Display System: 3274 Control Unit Description and Programmer's Guide,* GA23-0061.

In addition, it is recommended that for 3274 clusters you enhance your system availability and serviceability by installing the online test executive program (OLTEP) at the host system. Contact your IBM representative for information about OLTEP.

Response Time

The response time (performance/throughput) of the devices (displays and printers) attached to a 3274 can be significantly affected by many factors. Some of these factors are:

- Inbound and outbound message lengths.

- Frequency and content of message (tabbing, R/MDTs, selects, and so on).

- Type of channel and size of CPU.

- Protocol (SNA or non-SNA; BSC or SDLC).

- Cluster size, network content, and line speed.

- Printer speed and type (with or without intelligence, matrix or line printing, LU1, LU2, or LU3 mode, and with or without color option).

- Screen size and features (PS, color, and so on).

- The associated system control and application programs.

To help you to determine response time during the early planning stages of your 3274 display/printer subsystem, it is recommended that you contact your IBM sales representative. He has the tools and facilities to evaluate your 3274 subsystem response time.

Configuration Support

Multiple levels of diskettes (configuration-support levels) are available for the 3274 Control Unit. These levels allow selection of the diskettes (feature, system, and load) that will satisfy your requirements.

If you update your 3270 system with additional functions, you may also have to change your configuration-support level. Consult your IBM representative for specific functions included in each configuration-support level.

Configuration Support A (All 3274 Models)

Configuration Support A is shipped with all 3274s unless Configuration Support B, C, or T is specified. It is the base level of 3274 support including base color on attached terminals, plus support for solicitation of summary maintenance statistics from a 3274 Model 1A, 21A, 31A, 1C/SNA, 21C/SNA, 31C/SNA, and 51C/SNA through the use of Network Problem Determination Application (NPDA).

Configuration Support B (All Models except Models 1B and 21B)

Configuration Support B provides support for all 3270 functions included in Configuration Support A, plus the ability to attach 3278 Display Station Model 5's, and support for the following functions:

- Pacing of inbound message traffic (Models 1A, 21A, 31A, 1C/SNA, 21C/SNA, 31C/SNA, and 51C/SNA)

- Automatic session recovery in both single- and multidomain networks (1C/SNA, 21C/SNA, 31C/SNA, and 51C/SNA)

- Host notification of changes in the power on/off status at attached terminals (Models 1A, 21A, 31A, 1C/SNA, 21C/SNA, 31C/SNA, and 51C/SNA)

Configuration Support C (All Models except Models 1B, 21A, 21B, 21C, and 21D)

Configuration Support C provides support for all 3270 functions included in Configuration Support B plus support for the following additional functions:

- Structured Field and Attribute Processing (SFAP) (EBCDIC only)

- Programmed Symbols (PS) on attached terminals

- Extended Color on attached terminals

- Extended Highlighting on attached terminals

- Decompression of PS load data

- BSC text blocking

- BSC transparency

- Switched network operation (SNA/SDLC and Model 51C only)

- Integrated modems (Models 31C and 51C only)

- Loop attachment (SNA/SDLC and Model 51C only)

- IBM 3270 Personal Computer Attachment

Configuration Support D (Models 31A, 31C, 31D, and 51C with 2-Sided Diskette Drives)

For specifics on the use of Configuration Support D, see *IBM 3270 Information Display System, 3274 Control Unit Customizing Guide,* GA23-0065.

Configuration Support T (All Models except Models 1B, 21A, 21B, 21C, and 21D)

Configuration Support T provides support for all 3270 functions (except the Encrypt/Decrypt feature) included in Configuration Support A, plus support for the following:

- BSC text blocking

- BSC transparency

- Switched network operation (SNA/SDLC and Model 51C only)

- Integrated modems (Models 31C and 51C only)

- 3290 Information Panel Display Stations

- 5210 Printer Models G01 and G02

Encrypt/Decrypt Feature (3274 Models 1C, 21C, 31C, and 51C)

It is the customer's responsibility to install a copy of the secondary logical unit (LU) key (the terminal master key) in the 3274 Control Unit equipped with the Encrypt/Decrypt feature (#3680). This should be done by someone in a position of trust, such as a security officer. Once the terminal master key has been installed in the 3274, the 3274 generates a verification pattern based on the terminal master key. A master-key verification procedure can be performed by any operator without compromising the security of the Encrypt/Decrypt feature. A mercury battery, IBM Part 1743456, is installed in the 3274 to sustain the terminal master key when the 3274 power is off. Replacing this battery, or its equivalent, is also a customer responsibility. Procedures to install and verify the terminal master key, and to replace the mercury battery, are described in *IBM 3270 Information Display System 3274 Operator's Reference and 3274/3270 Problem Determination Guide, GA27-2850.*

Refer also to *IBM Cryptographic Subsystem Concepts and Facilities*, GA22-9063, for background information, and to *IBM 3270 Information Display System: 3274 Control Unit Description and Programmer's Guide*, GA23-0061, for programming information.

Predelivery Planning

The local channel-attached models of the 3274 are installed by an IBM service representative. The remotely attached models, on the other hand, are set up by your personnel. To prevent delays and help ensure a smoother installation/setup, it is recommended that a designated person in your organization:

1. Compile the installation-dependent information described in this section.

2. Distribute the installation-dependent information to the appropriate personnel or the IBM service representative.

3. Coordinate the activities of your personnel and/or the IBM service representative.

Local Channel Cables

The I/O interface and power sequencing cables between a 3274 and a local channel will be installed and connected by IBM. However, these cables must be ordered by cable order unless you are replacing a 3272 with a 3274, in which case, the same cables can be used.

Communication Cable

The communication cable that connects the remotely attached 3274 to the modem or channel service unit is delivered with the 3274. This cable is connected to the 3274 by the setup personnel. Instructions for connecting the communication cable to the 3274 are provided by the 3274 Setup Instructions delivered with these models. Connection to the modem or channel service unit is described in Appendix F.

System Grounding for a Remotely Attached 3274

Frame ground (EIA RS232 or CCITT V.28 pin 1) and signal ground (EIA RS232 or CCITT V.28 pin 7) should be connected together at one point only. This can be either in the 3274 or in the modem or channel service unit. It is recommended that, if possible, this connection be made in the modem or channel service unit.

In Europe/Middle East/Africa countries, the majority of modems do not have this connection made. For this reason, connection has been made within the remotely attached 3274 models at the plant of manufacture.

Note: If you are replacing a 3271 or 3275 with a 3274 Model 1C, 21C, 31C, or 51C, the modem should already have signal ground and frame ground connected together. However, this should be verified with your communication supplier.

Fan-Out Feature: This feature permits two or more control units to be connected to a single modem. If the modem has this capability, it is imperative that the signal ground and frame ground wires be connected together in the modem.

3274 Device Cables

The device cables are the coaxial cables that connect the 3274 to its attached display stations and printers. These cables should be procured and installed before the delivery of the 3274 and the units that will be attached to the 3274. Your personnel (or contractor) will connect these cables to the 3274 and the attached units.

Note: If you are replacing a 3271 or a 3272 with a 3274, you can use the existing device cables between the 3271/3272 and the attached units. However, the 3271 or 3272 device cables must be connected/disconnected by an IBM service representative, because the 3271 and 3272 and the attached units do not have customer access areas. It is recommended that, before the IBM service representative disconnects these cables, you have the cables marked as described below.

To reduce delays associated with connecting these cables to the 3274, it is recommended that each cable be marked at both ends to identify:

- The 3274 connector panel type (Category A panels or Category B panels) and the 3274 port (0 to 31) to which it is to be connected

- The unit type to be attached

For additional information concerning device cables, refer to *IBM 3270 Information Display System: Installation Manual—Physical Planning*, GA27-2787.

A 3274 Device Cable Attachment Form is provided in Appendix B of this guide to help simplify marking and connecting the cables. Instructions for completing all portions of the form except Network Addresses and for using the form are also included in Appendix B. A form should be completed for each 3274 cluster you order. Copies of the completed form should be given to the personnel who will install and mark the cables and to the personnel who will connect the cables to the 3274. In addition, a copy of the form should be stored in the pocket inside the 3274 customer access door for future reference.

Network Address Labels

Hexadecimal address labels (IBM Part 1743290) are delivered with the 3274. (They will be found, together with an *IBM 3274 Control Unit Problem Report Form,* GX23-0203, and *IBM 3274 Configuration Data Card,* GA23-0046, in the pocket inside the 3274 customer access door. On the Model 51C they are in the diskette storage area on the front of the machine.) After each terminal is set up, the label that specifies the terminal's network address should be attached to the address label holder on the terminal (if present).

It is recommended that a designated person in your organization (1) obtain the network addresses from the system programmer, (2) enter the addresses in the Network Address column of the 3274 Device Cable Attachment Form in Appendix B, and (3) distribute the address information to the person who will attach the address labels.

For information concerning SNA network addresses, refer to *Systems Network Architecture General Information: Network Addresses,* GA27-3102; for information concerning BSC network addresses, refer to *IBM 3270 Information Display System: 3274 Control Unit Description and Programmer's Guide,* GA23-0061.

Installing Your 3274 Subsystem

When your subsystem arrives and you are ready to install the equipment, you will need some information that is packaged with the various components (unpacking instructions, setup instructions, and problem determination information) and some that will be extracted from this manual (customizing forms, subsystem verification procedure, color convergence procedure for the 3279, Printer Authorization Matrix Form, and Model 31C or 51C switch setting instructions). Some of the forms in this manual require that you fill in information that is unique to your installation. It is recommended that you perform your installation in the following sequence.

Before Equipment Arrives

1 Prepare the physical location.

```
                    ┌──────────────────────┐
                    │ 3270 Installation     │
                    │ Manual — Physical     │──────────┐
                    │ Planning              │          │
                    │                       │          │
                    │   GA27-2787           │          │
                    └──────────────────────┘          │
                                                        │
┌──────────────────┐   ┌──────────────────────┐       │      To
│ 3274 Control Unit │   │ 3274 Device Cable    │       │      Physical
│ Planning, Setup,  │   │ Attachment Form      │───────┼───▶  Installation
│ and Customizing   │──▶│                      │       │      Personnel
│ Guide             │   │                      │       │
│   GA27-2827       │   │   Appendix B         │       │
└──────────────────┘   └──────────────────────┘       │
                                                        │
                        ┌──────────────────────┐       │
                        │ Unit Site Planning    │       │
                        │ and Preparation       │───────┘
                        │ Guides                │
                        │                       │
                        └──────────────────────┘
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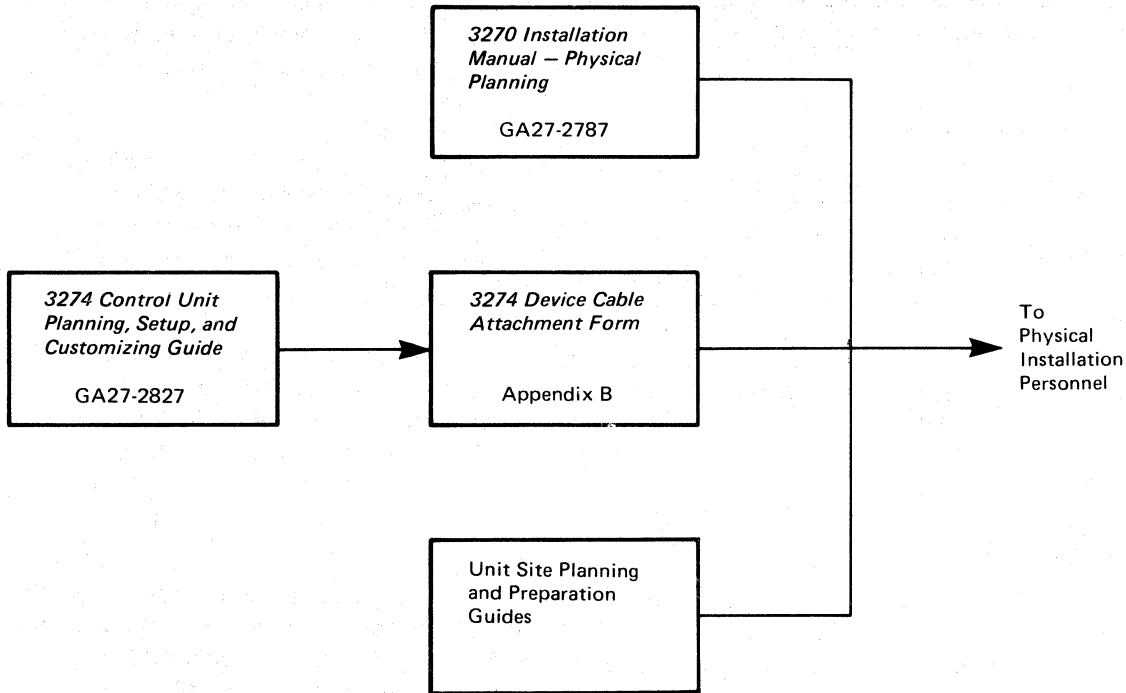
2 Prepare installation-unique information.

```
                                              ┌──────────────────────┐
                                              │ Instructions for      │
                                              │ 3274 Model 51C        │
                                              │ Switch Settings       │
                                       ┌──────┤                       │
                                       │ Instr│         Appendix H    │
                                       │ 3274 └──────────────────────┘
                                       │ Swit │
                               ┌───────┤      │       Appendix G
                               │ Backup│      │
                               │ Diskett│─────┘
                        ┌──────┤        │
                        │ Print│        │  Chapter 6
                        │ Matri│        │
┌──────────────────┐   │      │────────┘
│ 3274 Control Unit │   │      │  Chapter 4
│ Planning, Setup,  │   ┌──────┤
│ and Customizing   │──▶│ Initi│        │
│ Guide             │   │ Proce│        │
│                   │   │      │  Chapter 4
│   GA27-2827       │   │      │
└──────────────────┘   │  Chapter 4
                        └──────────────────────┘
```
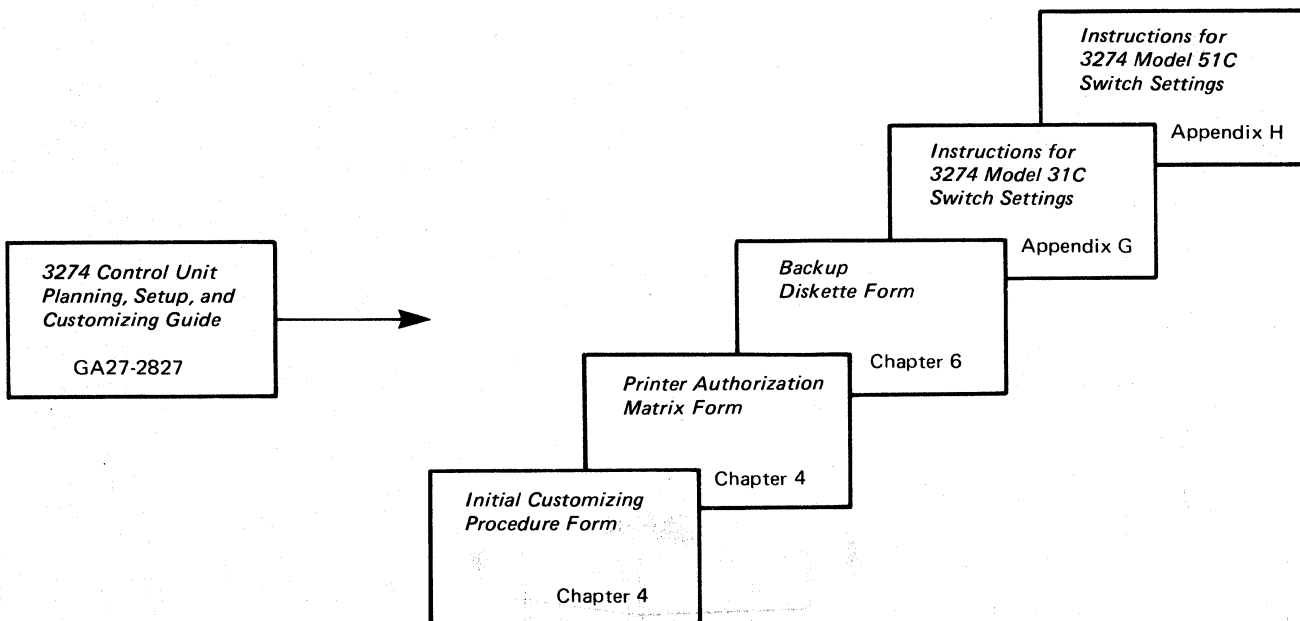
After Equipment Arrives

Note: Each unit has a Problem Determination Guide packaged with
it. If a problem arises while you are setting up a particular component,
consult the guide for that component before calling IBM.

3 Unpack and set up the display terminals.

Unpack Instructions

Display

Setup Instructions
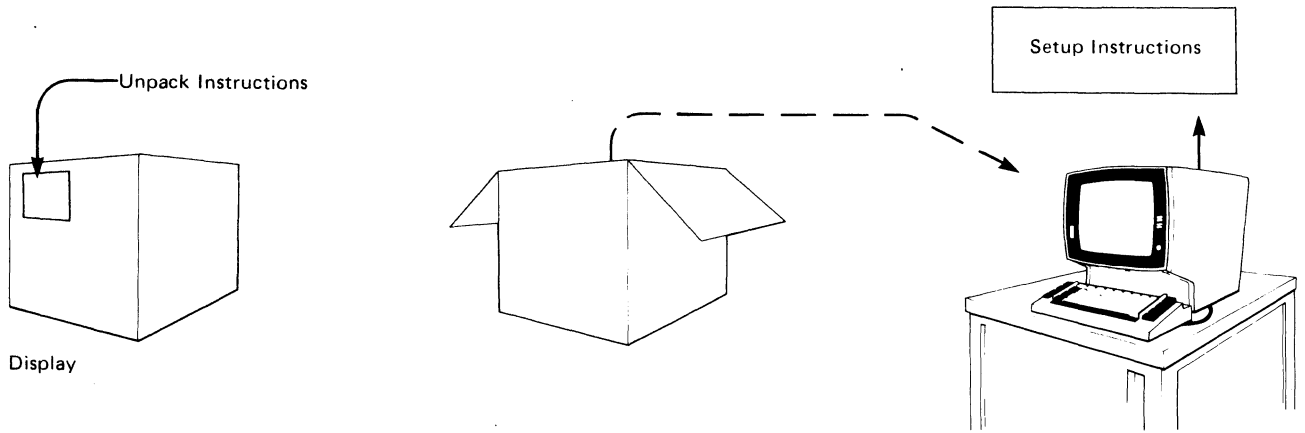
4 Unpack and set up the printers.

Unpack Instructions

Table-Top Printer

Setup Instructions

Unpack Instructions

Floor-Standing Printer

Lift carton

Setup Instructions
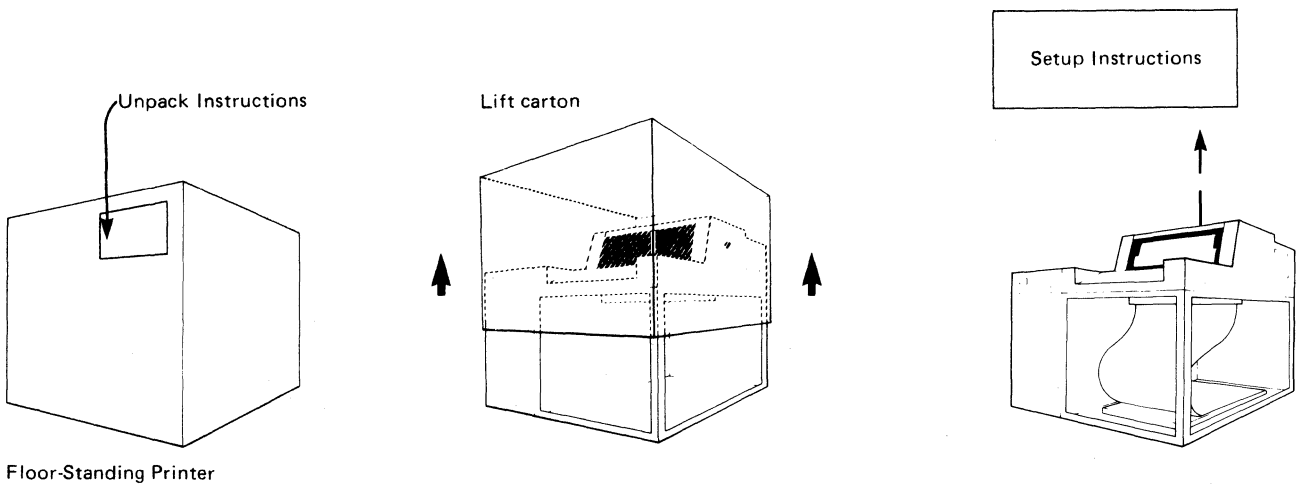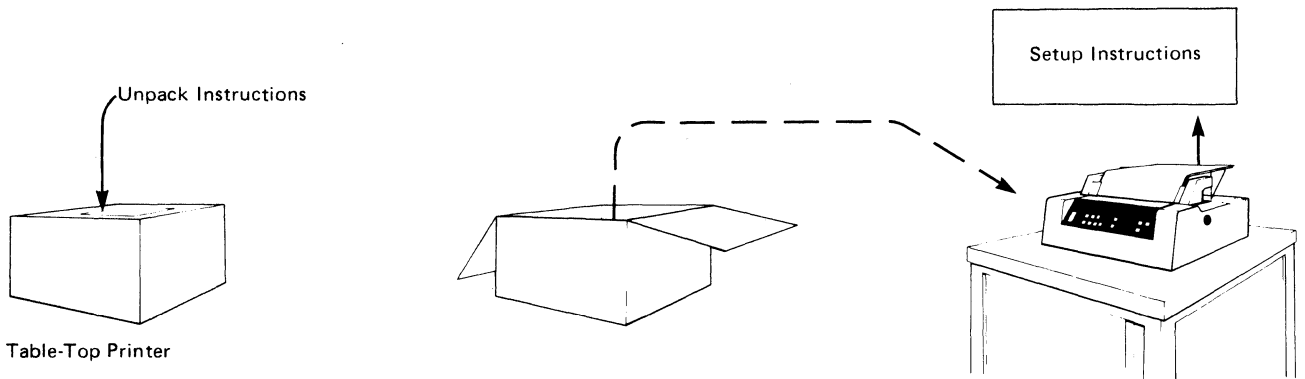
5 Unpack and set up the 3274 Control Unit.

Note: Because special skills and tools are needed to set up A, B, and D models, call your IBM service representative after your personnel have unpacked and placed the unit. Your personnel should continue at step **6** when the IBM service representative completes the setup.

3274 Control Unit
All Models except 51C

Unpack Instructions

Lift carton

Setup Instructions
GA27-2855

CE Information

(Retain for IBM Service
Representative)

3274 Control Unit
Model 51C

Unpack Instructions
and Contents List

CE Information

(Retain for IBM Service Representative)

Setup Instructions
GA23-0047
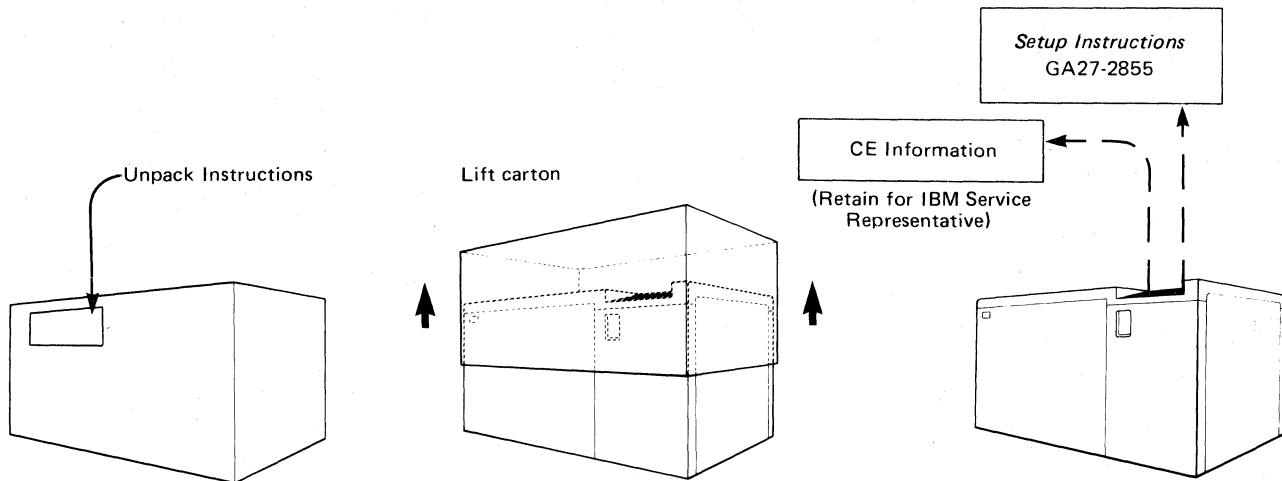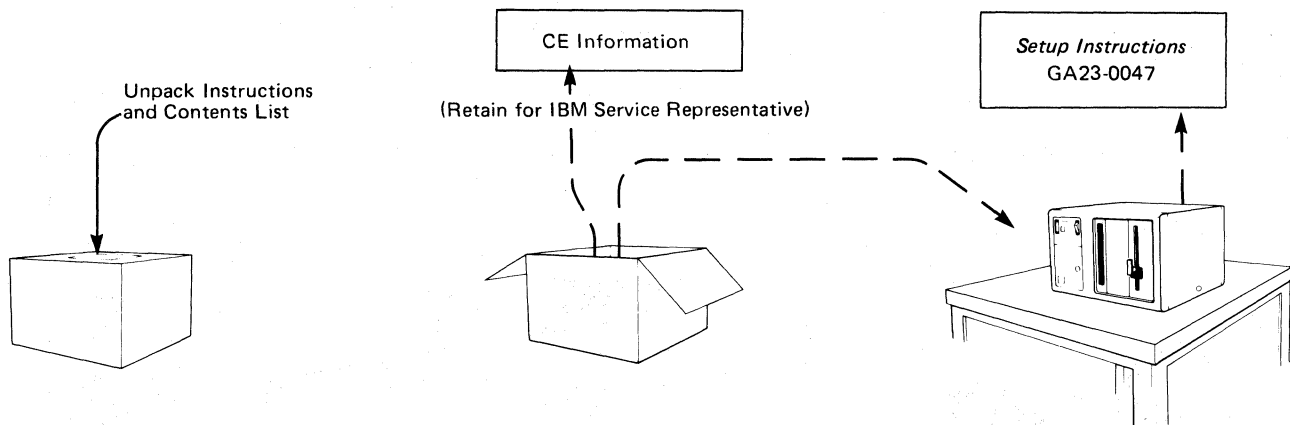
6 Connect the terminals.

3274 Control Unit
All Models except 51C

Port A0

3274 Control Unit
Model 51C

Port A0
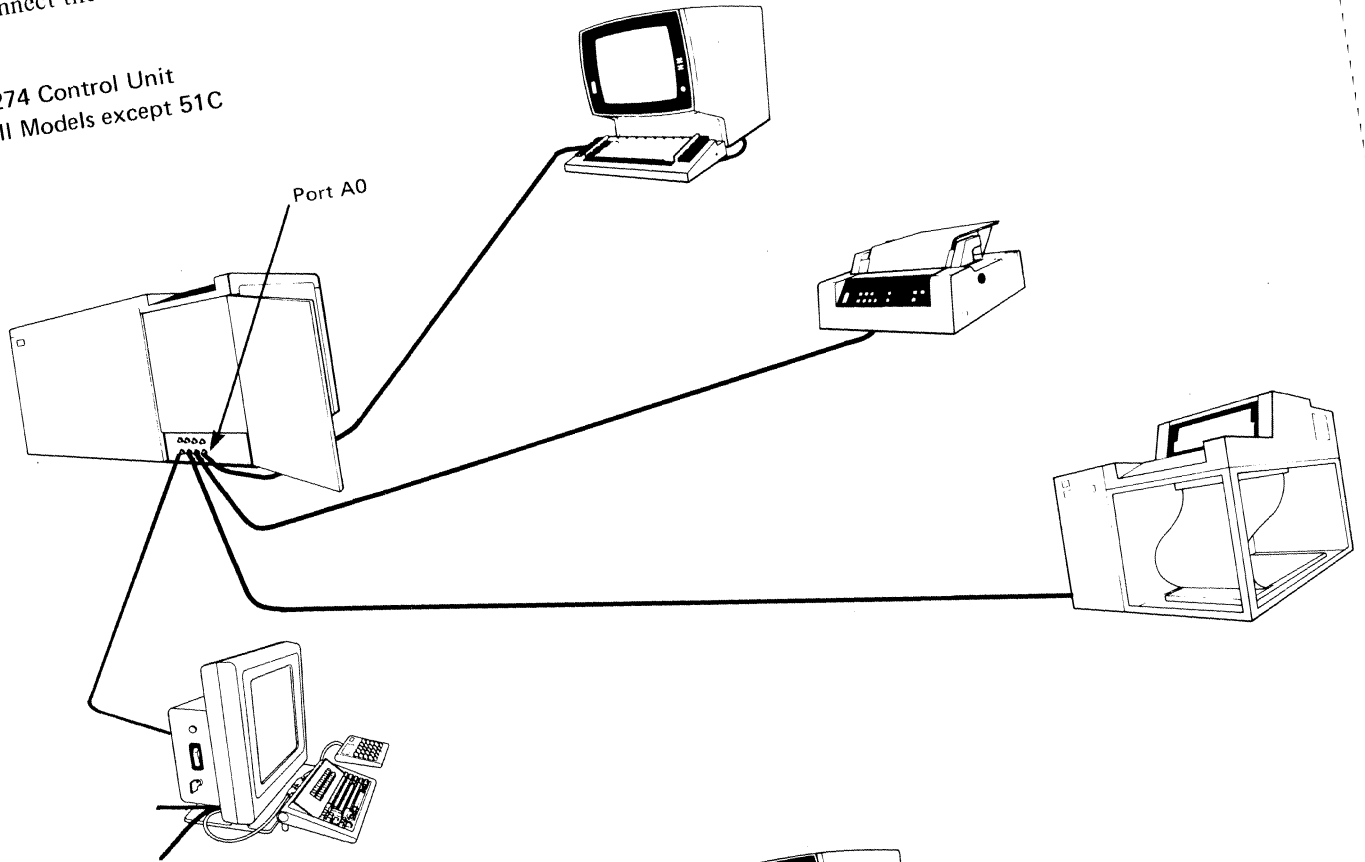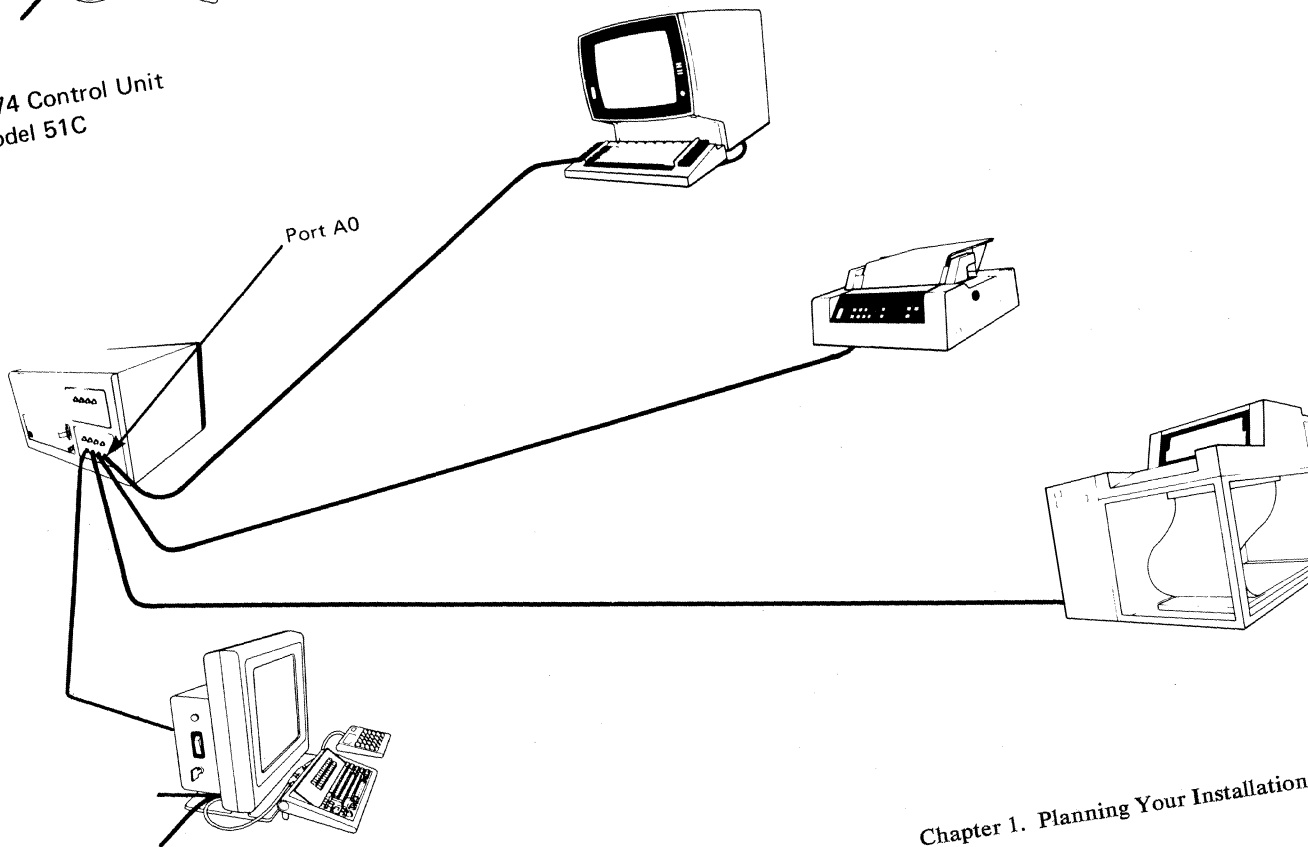
7 Supply customizing information.

Backup
Diskette Form*

Instructions for 3274
Model 31C or 51C
Switch Settings*

Subsystem Verification
Procedure

Printer Authorization
Matrix Form*

```
3274 Control Unit
Planning, Setup, and
Customizing Guide

GA27-2827
```

8 4 2 1 Indicator Codes

Diskette Insertion
Diagram

Keyboard Diagrams

Initial Customizing
Procedure Form*

Color Convergence
Procedure

To
Customizer

*From Step **2**

8 Verify the validation numbers.

System Diskette

Validation
Number (XX)

Feature Diskette

Validation
Number (XX)

Validation Number (XX)

Initial Customizing
Procedure Form

Must be the
same number

1-14

9 Customize the 3274 Control Unit.

3274 Control Unit
All Models except 51C

3274 Control Unit
Model 51C

Port A0

3178 Display Station
3278 Display Station or
3279 Color Display Station
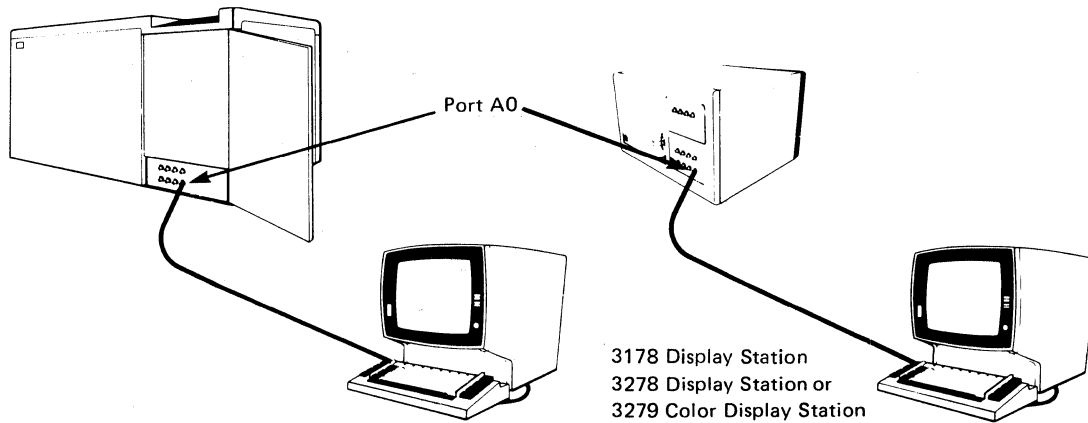
10 Press the IML pushbutton on the control panel.

3274 Control Unit
All Models except 51C

3274 Control Unit
Model 51C

IML pushbutton
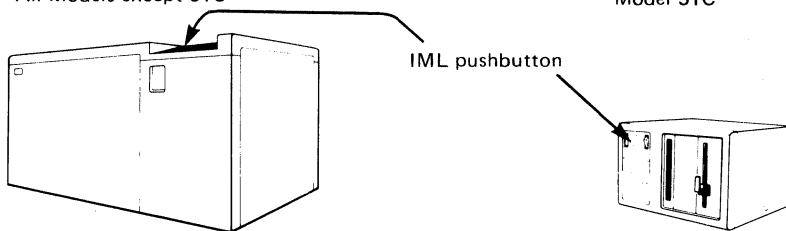
11 Perform subsystem verification.
Note: Go to Appendix D in this manual.

3178 Display Station
or
3278 Display Station
or
3279 Color Display Station
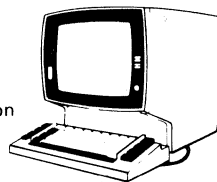
12 Set the 3274 Model 31C or 51C switches.
Note: Go to Appendixes G and H in this manual.

3274 Control Unit
Model 31C

3274 Control Unit
Model 51C
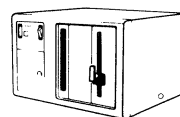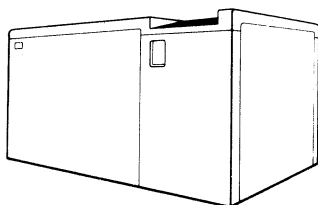
Replacing a 3271 or a 3272 with a 3274

When a 3272 is replaced by a local channel-attached model of the 3274, the existing 3272 local channel attachment and device cables (coaxial cables between the 3272 and its attached units) can be used with the 3274. However, if the existing 3277/3284/3286/3288 units are to be attached to the 3274, the device addresses of these units have to be changed. For information concerning device addresses for the 3274 cluster, refer to *IBM 3270 Information Display System: 3274 Control Unit Description and Programmer's Guide*, GA23-0061.

The 250V watertight plug used on the 3272 is not compatible with the 3274 waterproof plug. Therefore, when a 3272 is replaced by a 3274, the power receptacle must be changed prior to installation of the 3274. See *IBM 3270 Information Display System: Installation Manual—Physical Planning*, GA27-2787, for the type required.

When a 3271 is replaced by a remotely attached model of the 3274, the existing 3271 device cables and modem can be used with the 3274. However, the device addresses of the existing 3277/3284/3286/3288 units and the communication cable that connects the 3271 to its modem cannot be used with the 3274. A new communication cable is delivered with the 3274.

If the existing 3271 or 3272 device cables are to be used with the 3274, it is recommended that the cables be marked as described under "3274 Device Cables."

Notes:

1. The 3277 keyboards and operator ID card readers cannot be used with the 3178, 3278, 3279, or 3290.

2. The 3274, when operating in BSC mode, functions as a 3271 Control Unit, but is not compatible with the 3275 Display Station.

When a 3271 or a 3272 is replaced by a 3274, the following should be considered:

- The 3274 can control up to sixteen 3277s/3284s/3286s/3288s. Therefore, more than one 3274 is required to replace a 3271 or 3272 that has more than 16 of these units attached.

- The 3274 needs a 3178, 3278, or 3279 attached to port A0. Therefore, a 3178, 3278, or 3279 must be added to the existing units.

Note: All the 3271 or 3272 device cables must be connected/disconnected by an IBM service representative, because the 3271 or 3272 and the attached units do not have customer access areas.

Problem Determination Procedures

The problem determination procedures will help you perform problem determination with minimal reliance on the host system. These procedures use tests contained in the 3178, 3230, 3262, 3268, 3274, 3278, 3279, 3287, 3289, 3290, and 5210 units. See *IBM 3270 Information Display System Library User's Guide*, GA23-0058, for a list of problem determination manuals.

The procedures enable you to determine whether a problem is being caused by a cluster unit, a system unit or function outside the 3274 cluster, or an operator error. You will also be able to determine whether:

- Operation in a degraded mode is possible.

- Useful work can be done until the problem is corrected.

- The repair action can be scheduled for deferred maintenance.

If you require the help of an IBM service representative, the error message and error condition information should be recorded on a problem report form for the failing unit before the service representative is called. This information will help the service representative resolve the problem as soon as possible.

Relocation/Removal

To ensure proper handling and/or shipping of the 3274 and the attached terminals when the units are removed or relocated to a different room, building, or mailing address, it is recommended that you call your local IBM branch office. Your IBM representative will supply you with the necessary information and can order the required materials.

Note: The help of an IBM service representative is required to relocate a local channel-attached 3274.

Progress Review

To ensure a smooth installation and/or setup of the 3274 and attached terminals, it is recommended that approximately two months before delivery of the units you and the IBM representative review (1) the progress (or the schedule associated with the changes) at the host system site, (2) the communication network and modems, (3) the physical changes needed at the cluster site, and (4) the progress of the predelivery planning tasks. At the same time, you and your IBM representative can review the cluster configuration to determine whether the feature mix is adequate.

It is also recommended that about two weeks before delivery of the units a designated person in your organization and the setup personnel review the setup instructions with your IBM representative.

IBM Americas/Far East and IBM Europe/Middle East/Africa

The predelivery/setup responsibilities and procedures for the 3274 Models 1C, 21C, 31C, and 51C, for the 3178, 3278, 3279, and 3290 display stations, and for the 3230, 3262, 3268, 3287, 3289, and 5210 printers are the same for U.S. installation and for installation in countries served by IBM A/FE and IBM E/ME/A.

If you need IBM publications in languages other than English, ask your IBM representative. The IBM representative can provide information concerning the availability of translated IBM publications.

Supplemental Information

Safety

The 3270 units are listed by the Underwriters' Laboratory. Exposed hazardous voltages are not present at the designated customer access areas of the 3178, 3230, 3262, 3268, 3274, 3278, 3279, 3287, 3289, 3290, and 5210 units.

DANGER
Your personnel should be warned not to go beyond the customer access areas, because there are hazardous voltages within the areas designated for trained personnel only.

Electrical grounding of the 3274 and of all the attached units is essential for safety. Be sure that all the facility power receptacles are properly grounded and will accept a grounding type plug (3-prong or equivalent). If you have any questions about the grounding of power receptacles, contact an electrician. For information about power cord plugs, power receptacles, and other safety considerations, refer to *IBM 3270 Information Display System: Installation Manual—Physical Planning*, GA27-2787.

Security

If the 3274 and the attached units have access to proprietary records or personnel records, it is recommended that you implement appropriate safeguards for the security of the information and the units. IBM makes available some basic functions, but you should decide which ones to use. In addition to safeguards that you may develop, the Security Keylock and Magnetic Reader Control features and the Magnetic Slot Reader accessory may be ordered for 3278s and 3279s. Also available with the remotely attached models of the 3274 is an Encrypt/Decrypt feature that enhances data security in an SNA-communication environment.

Personnel Training

If you intend to provide formal training for your operators, you may wish to use the operator's guides and problem determination guides that are available for your units. See *IBM 3270 Information Display System Library User's Guide*, GA23-0058, for a list of the manuals appropriate to your installation.

Voice Communication between Terminal Operators and Host System Operators

It is recommended that a telephone be available at each location to allow the 3274 cluster operators to talk with the host system operators. This will assist the operators in performing the problem determination procedures as well as the daily work.

Chapter 2. Introduction to Customizing

Once installation of your 3274 Control Unit is completed as shown in the appropriate "Setup Instructions," and the device cables are connected, you are ready to configure your system of displays and printers. The 3274 Control Unit permits you, the user, to specify the configuration under which your 3274 operates; that is, you customize your 3274 subsystem. The configuration information is stored on a diskette mounted inside the 3274 and enables the 3274 to control all the terminals attached to it. This diskette, delivered with the 3274, also contains microcode to direct control unit functions and perform diagnostic routines to test the 3274 prior to operation. But before this diskette can function in your system, you must customize it by writing your configuration information on it.

Briefly, customizing is performed by keying in the system parameters at a 3178 or 3278 Display Station or a 3279 Color Display Station attached to port A0 of the 3274. As a result of this procedure, a unique configuration table is written on the diskette. If 3290 Information Panel Display Stations are being used with the 3274, the configuration table is written onto a *load* diskette. If no 3290s are being used, the configuration table is written onto a *system* diskette. In daily operations, the operator inserts this customized diskette in the 3274 and presses the on/off switch to the on position, or, if this switch is already on, presses the IML pushbutton. This action causes the 3274 to execute the diagnostic routines stored on the diskette. Upon successful completion of these tests, the 3274 is loaded with the configuration data that was stored on the diskette by the customizing procedure. System operation can now begin.

There are various occasions when it will be necessary to customize your system, or load, diskette(s):

- When you initially customize your diskette (as described above).

- When you wish to duplicate your diskette. (This new diskette is referred to as a *backup* diskette.)

- When you wish to generate a second diskette to be used for a different purpose; for example, you may choose to have one diskette to operate in BSC mode and another to operate in SDLC/SNA mode.

- When you need to recustomize your diskette because you have changed your configuration. This includes adding or removing features such as Encrypt/Decrypt or terminal adapters.

Customizing a 3274 Control Unit usually involves a planner and someone responsible for the actual customizing operation. The planner identifies and compiles the configuration information needed for each 3274 and gives it to the person responsible for customizing the 3274. This person is prompted by a series of sequence numbers that are displayed in the form of three digits. The responses to these sequence numbers are usually entries of 1 to 8 alphanumeric characters. The 3178, 3278, or 3279 display station used for this operation must be attached to port A0 of the 3274. The display station should also be near the 3274 during customizing because certain indicators must be observed on the 3274. (If you are

using a 3279 Color Display Station, a color convergence procedure may have to be performed before customizing. The color convergence procedure is described in Appendix E.)

In general, the person who customizes the system or load diskette uses a *language* diskette and a *feature* diskette in conjunction with the customizing procedure. The language diskette is used to customize the system or load diskette for languages other than English (U.S.), Canadian (Bilingual), Canadian French (all are EBCDIC), and ASCII (U.S.).[1] The feature diskette is used to customize the system or load diskette for all other cluster parameters. The detailed customizing procedures explain when to insert the required diskettes and direct the person customizing the 3274 to enter the configuration information into the 3274 through a 3178, 3278, or 3279 display station attached to port A0 of the 3274.

To simplify the customizing task, it is recommended that the planner compile the configuration information and supply it to the person responsible for performing the customizing procedure. Included in Chapter 3 are descriptions of the parameters to be entered and instructions for completing the Initial Customizing Procedure Form (Chapter 4). A form should be completed for each 3274 ordered before delivery of the unit. In addition, configuration information should be copied on the *IBM 3274 Configuration Data Card,* GA23-0046, (shipped with the 3274) and stored in the 3274. (A pocket on the inside of the 3274 customer access door is a convenient place to store this card. On the Model 51C, this card is stored in the diskette storage area on the front of the machine.)

Subsystem Verification

After customizing is completed, all devices are attached to the 3274, and an initial microcode load (IML) of the subsystem has been performed, it should be verified that the control unit can reach all attached devices. This can be done by means of the "Subsystem Verification Procedure" in Appendix D. This procedure allows the operator to:

- Verify the number of Type A and B devices configured.

- Determine whether a device is powered on or off.

- Determine whether a device has been disabled as a result of a device error.

This procedure should be provided to the person responsible for performing the customizing procedure.

3274 Model 31C and 51C Switch Settings

It may be necessary to set various switches on the 3274 Models 31C and 51C prior to operation. Information needed to set these switches is described in Appendix G for Model 31C and in Appendix H for Model 51C. Instructions to be given to the person responsible for performing the customizing procedure are also included in these appendixes.

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[1]   ASCII is available in the U.S. only.

Preparation for Customizing

To prepare for customizing, it is recommended that the planner:

1. Use Chapter 3 as a guide to determine what configuration information is needed for each 3274 model. Figure 2-1 and the sequence-number descriptions identify the information sources.

2. Using Figure 2-1 as a guide and the sequence number descriptions in Chapter 3, compile the needed information for each 3274 and fill in the Initial Customizing Procedure Form in Chapter 4.

   Note: The sequence number descriptions in Chapter 3 are grouped as follows:

   3274 Models 1A, 21A, and 31A

   3274 Models 1B, 1D, 21B, 21D, and 31D

   3274 Models 1C, 21C, 31C, and 51C

3. Identify each diskette. A label in the upper right corner of the diskette identifies the diskette type by name, IBM part number, and validation number. The IBM part numbers (listed according to Configuration Support A, B, C, or T) are:

	A	B	C	T
Feature diskette	5718400	5675100	5675102	6062688
System diskette	5718420	5675101	5675103	6062689
Language diskette	5718440	5718440	5862415	5862415
Load diskette	—	—	—	6062856

   In addition, you may wish to write a unique designation of your own on the label; for example, you could specifically identify it as to configuration and 3274 Control Unit in which it is to be customized and used.

4. Enter the following information on the Initial Customizing Procedure Form in Chapter 4:

   a. The type of keyboard (typewriter or data entry) to be used by the operator during customizing.

      Note: If using a 76- or 88-key Japanese English or Japanese Katakana keyboard, specify the number of keys and keyboard type.

   b. In step 1, the identification of each diskette to be used.

   c. In step 7, the response to sequence number 031. This is the number (0, 1, 2, or 3) of RPQ diskettes to be used. If your response to sequence number 031 is not 0, you will have to enter a response to sequence number 032. See "032 (Request RPQ Parameter List)" in Chapter 3.

d. In step 8, the responses to be keyed in by the operator, using as a guide the information in Chapter 3 that applies to the model to be customized. Use that portion of the step that applies to your configuration.

5. Fill out the Printer Authorization Matrix Form at the end of Chapter 4 if the printer authorization matrix is to be defined, or if changes are to be made to the existing matrix.

6. Give the following to the operator who will customize the 3274:

a. A copy of the Color Convergence Procedure (Appendix E) (if required)

b. The completed Initial Customizing Procedure Form (this is a multipage form)

c. A copy of the appropriate keyboard layout showing valid keys for the keyboard the operator will be using (Figures 4-1 and 4-2, in Chapter 4)

d. The completed Printer Authorization Matrix Form (if required)

e. The 3274 Diskette Insertion Procedure that applies to the 3274 being customized (Figure 4-3)

f. A copy of the "Operator Codes" chart (Figure 4-4, in Chapter 4)

g. Copies of the "8 4 2 1 Indicator Codes" charts (Figures 4-5, 4-6, and 4-7, in Chapter 4)

h. Feature and system diskettes

i. Language diskette (if applicable)

j. Load diskette (if applicable)

k. RPQ diskette(s) (if applicable)

l. RPQ parameter list instructions (if applicable)

m. A copy of the Subsystem Verification Procedure (Appendix D)

n. Instructions for setting Model 31C switches (if applicable, Appendix G) or Model 51C switches (if applicable, Appendix H)

It may be convenient for the planner at the central or host-system location to prepare the Initial Customizing Procedure Forms for several 3274s at other locations and to forward the forms to each location.

Sequence Number	Function	3274[1]					Notes	Response Definition
		1A, 21A, 31A	1B, 21B	1C, 21C, 31C	51C	1D, 21D, 31D		
001	Keyboard validation	X	X	X	X	X	1	—
011	Patch request	X	X	X	X	X	1	—
021	Printer authorization matrix	X	X	X	X	X	2	0=No 1=Yes
022	Printer authorization matrix specification	X	X	X	X	X	1	See Chapter 3.
031	RPQ diskettes required	X	X	X	X	X	3	0=Not required 1=One diskette required 2=Two diskettes required 3=Three diskettes required
032	Request RPQ parameter list	X	X	X	X	X	4	0=No 1=Yes
111	Number of Category B terminals	X	X	X	X	X	—	See Chapter 3.
112	Number of Category A terminals	X	X	X	—	X	—	See Chapter 3.
113	Extended function store	X	—	X	X	X	3	See Chapter 3.
114	IBM 3270 Personal Computer Attachment	X	—	X	X	X	6	0=No 1=Yes
121	Keyboard character set language	X	X	X	X	X	3	See Chapter 3.
131	Typewriter keyboard	X	X	X	X	X	3	0=No 1=Yes
132	Data entry keyboard	X	X	X	X	X	3	0=No 1=Yes
133	Data entry keypunch-layout keyboard	X	X	X	X	X	3	0=No 1=Yes
134	APL keyboard	X	—	X	X	X	3	0=No 1=Yes
135	Text keyboard	X	—	X	X	X	3	0=No 1=Yes
141	Magnetic character set	X	X	X	X	X	3	A=No B=Numeric (3277-compatible) C=Alphanumeric (auto entry for nondisplay data) D=Alphanumeric (auto entry for all data)
143	Host-loadable printer authorization matrix	X	X	X	X	X	2	0=No 1=Yes
145	3289 Text print control	X	X	X	X	X	2	0=No 1=Yes
147	Local-copy function	—	—	X	X	X	2,5	0=No 1=Yes
151	3274 model designation	X	X	X	X	X	3	1,2,3,4,A,B,C,D,E
161	Color convergence	X	X	X	X	X	3	0=No 1=Yes
162	Structured field and attribute processing (SFAP)	X	—	X	X	X	6	0=No 1=Yes
163	Extended character set adapter	X	—	X	X	X	6	See Chapter 3.
164	Programmed Symbols (PS)	X	—	X	X	X	6	0=No 1=Yes
165	Decompression	X	—	X	X	X	6	0=No 1=Yes
166	Attribute Select keyboard	X	—	X	X	X	6	A=None B=Without numeric lock C=With numeric lock
170	3290	X	—	X	X	X	—	0=No 1=Yes
171	Multiple Interactive Screens	X	—	X	X	X	—	See Chapter 3.
173	3290 Options	X	—	X	X	X	—	See Chapter 3.
175	Password	X	—	X	X	X	—	See Chapter 3.
176	BSC Enhanced Communication Option	—	—	X	X	—	—	0=No 1=Yes
201	Control unit address	X	—	—	—	—	2	See Chapter 3.
211	SCS support	X	—	X	X	—	3	0=No 1=Yes
213	Between bracket printer sharing	X	—	X	X	—	2	0=No 1=Yes

Figure 2-1 (Part 1 of 2). Configuration Information Needed

Sequence Number	Function	3274[1]					Notes	Response Definition
		1A, 21A, 31A	1B, 21B	1C, 21C, 31C	51C	1D, 21D, 31D		
215	Physical unit identification (PUID)	X	–	X	X	–	2	See Chapter 3.
301	Control unit number (BSC only)	–	–	X	X	–	2	See Chapter 3.
302	SDLC control unit address	–	–	X	X	–	2	See Chapter 3.
305	BSC printer polling	–	–	X	X	–	5	0=No 1=Yes
310	Modem connection	–	–	X	X	–	3	See Chapter 3.
311	Modem wrap	–	–	X	X	–	3	0=Not possible 1=Possible
313	NRZI encoding (SDLC only) or NRZ	–	–	X	X	–	3, 7	0=NRZ 1=NRZI
313	Internal or external clocking	–	–	X	X	–	5	0=External 1=Internal
314	Multipoint or point-to-point network	–	–	X	X	–	3, 7	0=Multipoint 1=Point-to-point
317	Switched network backup	–	–	X	X	–	3, 7	See Chapter 3.
318	Normal or half-speed transmission	–	–	X	X	–	3, 7	0=Normal 1=Half
321	ASCII or EBCDIC character set	–	–	X	X	–	3, 7	0=EBCDIC 1=ASCII
331	BSC or SDLC protocol	–	–	X	X	–	3, 7	0=BSC 1=SDLC
342	RTS (request-to-send) control (2-wire or 4-wire)	–	–	X	X	–	3, 7	See Chapter 3.
343	Communications Interface Options	–	–	X	X	–	3, 7	See Chapter 3.
345	Answer tone	–	–	–	X	–	–	0=Transmit Answer Tone Required 1=Transmit Answer Tone Not Required
347	High-speed data rate	–	–	–	X	–	–	0=Data rate less than 38.4K 1=Data rate 38.4
351	HPCA adapter (SDLC only) or CCA	–	–	X	X	–	3, 7	0=CCA 1=HPCA
352	Encrypt/decrypt	–	–	X	X	–	3	0=No 1 Yes
360	Switched retry	–	–	–	X	–	–	00=X.21 Switched Not Used XX=Number of retries Minimum 00
361	Switched retry timing	–	–	–	X	–	–	00=X.21 Switched Not Used XX=Number of seconds between retries, must be from 01 to 20.
362	X.21 Switched options	–	–	–	X	–	–	See Chapter 3.
900	Entry acceptance	X	X	X	X	X	1	–
901	Printer authorization matrix acceptance	X	X	X	X	X	1	–
999	Modify procedure	X	X	X	X	X	1	–

[1] An X in the model column indicates needed information; a dash indicates not applicable.

Notes:

1. Information is already identified on the Initial Customizing Procedure Form.

2. Obtain information from the system programmer.

3. Obtain information from equipment orders placed with IBM, with the common carrier, and (if necessary) with the modem manufacturer.

4. An RPQ parameter list is required by certain RPQs. Specific information is supplied with the RPQ.

5. Models 1C, 21C, 31C, and 51C BSC only.

6. Does not apply to Models 1B, 21A, 21B, 21C, and 21D.

7. This parameter must be compatible with the host-system communication controller and/or the modem.

Figure 2-1 (Part 2 of 2). Configuration Information Needed

Chapter 3. Preparing to Customize

This chapter supplies the necessary information to permit the planner to fill in the Initial Customizing Procedure Form in Chapter 4. Chapter 3 is divided into three main sections, according to model number. The first contains the sequence numbers and instructions for customizing Models 1A, 21A, and 31A; the second, the sequence numbers and instructions for customizing Models 1B, 1D, 21B, 21D, and 31D; and the third, the sequence numbers and instructions for customizing Models 1C, 21C, 31C, and 51C. Select the section that includes the model to be customized, and write the replies in step 8 of the Initial Customizing Procedure Form in Chapter 4. The sequence numbers are listed here and on the form in left-to-right, top-to-bottom numeric order; however, they may not be displayed on the 3178, 3278, or 3279 display station screen in numeric order. Although all sequence numbers are listed in each group of models, only those required for the model being customized are explained. All other sequence numbers instruct the planner to insert a zero response on the Initial Customizing Procedure Form. This is necessary because all sequence numbers will be displayed after the responses are keyed in. The sequence numbers that are not applicable to the model being customized will be filled in with the default values. See the section for your 3274 model for the default values.

3274 Model 1A, 21A, and 31A Customizing

Use the following sequence numbers and instructions in conjunction with the Initial Customizing Procedure Form in Chapter 4 to customize 3274 Models 1A, 21A, and 31A.

001 Keyboard Validation

The response required for this sequence number is already entered on the form in step 4; it verifies that the keyboard at the 3178, 3278, or 3279 is operating properly. Note that the last two digits (digits following the space) in the response to sequence number 001 identify the Validation Number that must be used in the customizing procedure. This number must be equal to or greater than the Validation Number on the feature and system diskette labels.

Note: If a data entry keypunch layout keyboard is used, the New Line key is pressed when ENTER is specified. Also, the PF10 key is pressed when RESET is required; the PF8 key is pressed when New Line is required. See Figures 4-1 and 4-2 (in Chapter 4) for valid key positions and the differences just noted. Be sure to specify the keyboard type on the Initial Customizing Procedure Form.

011 Patch Request

The response required for this sequence number is already entered on the form in step 5. The IBM service representative may use this sequence number to make a diskette patch request.

021 Printer Authorization Matrix

Enter a 0 in step 6 on the Initial Customizing Procedure Form if any of the following conditions applies:

- The printer authorization matrix is to be entered only by a host application program (a 1 must be specified in sequence number 143).

- All printers are to be used in system mode, and local copy operations are not desired.

- No printers are to be attached to the system.

Enter a 1 if a matrix is to be defined, thereby causing sequence number 022 to be displayed. Regardless of the response to sequence number 143, the matrix specified in sequence number 022 will remain in effect each time the 3274 is IMLed.

022 Printer Authorization Matrix Specification

The printer authorization matrix is defined in sequence number 022. See Appendix C for detailed information on responding to sequence number 022.

Fill in the appropriate spaces on the Printer Authorization Matrix Form with a definition for each printer in your configuration, and attach it to the Initial Customizing Procedure Form. The definitions may be entered in any sequence. Also, definitions do not have to be entered successively; for example, you may enter definitions in groups 1, 2, and 3 of the form, skip groups 4 and 5, and continue at group 6.

Once a printer authorization matrix has been defined, sequence number 021 is no longer displayed when a customized 3274 Control Unit is being updated. Instead, the defined matrix is displayed. If the entire matrix is deleted, sequence number 021 will again be displayed during each updating procedure until a new matrix is defined. Any time the initial customizing procedure is performed, the sequence number 021 is displayed and the printer authorization matrix must be redefined if it is still required.

031 RPQ Diskettes Required

Enter the number of RPQ diskettes required (0, 1, 2, or 3) in step 7 of the Initial Customizing Procedure Form.

032 Request RPQ Parameter List (Configuration Support C and T Only)

Enter a 1 if you require the RPQ parameter list; enter a 0 if not. If you enter a 1 here, sequence number 033 (RPQ Parameters) will be displayed, with spaces for parameter information. If you enter a 0, 033 will not be displayed.

Note: An RPQ parameter list is required by certain RPQs. Specific information about this list, sequence number 033 format, and implementation is supplied with the RPQ.

111 Number of Category B Terminals (Configuration Support A, B, and C Only)

Enter a 2-digit number (00 to 16) specifying the number of Category B terminals that it is possible to attach to your 3274. (The actual number you have attached at any given time may be smaller than this number.) See sequence number 112 for a description of category types.

Notes:

1. A 2-digit number must be entered. If necessary, use a leading zero; for example, to specify 8, enter 08.

2. Specify the number of Category B terminals in multiples of 4 (maximum of 16).

3. Category B terminals cannot be attached to a 3274 with a 3290 attached.

112 Number of Category A Terminals

Enter a 2-digit number (08 to 32) specifying the number of Category A terminals that it is possible to attach to your 3274. (The actual number you have attached at any given time may be smaller than this number.) See Note 1 following.

Notes:

1. If any 3290 terminals are to be configured with multiple interactive screens, it is recommended that you specify the actual number of Category A terminals.

2. A 2-digit number must be entered. If necessary, use a leading zero; for example, to specify 8, enter 08.

3. Category A terminals:

| 3178 Models 1 and 2
3230 Model 2
3262 Models 3 and 13
3268 Model 2
3278 Models 1, 2, 3, 4, and 5
3278 Models 1−5 with IBM 3270 Personal Computer Attachment
| 3279 All Models
3287 Models 1 and 2 with 3274/3276 Attachment feature (#8331)
3287 Models 1C and 2C
3289 Models 1 and 2
| 3290 Information Panel
5210 Models G01 and G02

Category B terminals:

3277 Models 1 and 2
3284 Models 1 and 2
3286 Models 1 and 2
3287 Models 1 and 2 with 3271/3272 Attachment feature (#8330)
3288 Model 2

4. Specify the number of Category A terminals in multiples of 8 (maximum of 32) and the number of Category B terminals in multiples of 4 (maximum of 16), unless the sum of the two categories exceeds 32. See Note 1.

If the sum of the two categories exceeds 32:

• For Category B terminals, specify the actual number of Category B terminals (sequence number 111).

• For Category A terminals, specify the difference between 32 and the number of Category B terminals (sequence number 111).

Example: 13 Category B terminals and 17 Category A terminals would be specified as 13 and 19, respectively. Figure 3-1 shows the relationship and the ways to specify the various Category A and B terminal quantities. Note that, when Category A terminal adapters are added or removed, the host-recognized address of port B0 changes.

Number of Category A Terminals

Quantity		Base		A1		A2		A3	Adapter Type
		1 2 3 4 5 6 7 8		9 10 11 12 13 14 15 16		17 18 19 20 21 22 23 24		25 26 27 28 29 30 31 32	
	0	Specify: A08 and B00		Specify: A16 and B00		Specify: A24 and B00		Specify: A32 and B00	

Within the grid (Number of Category B Terminals, rows 1–16):

- B1 (rows 1–4):
  - Base: Specify: A08 and B04 — B0=08*
  - A1: Specify: A16 and B04 — B0=16*
  - A2: Specify: A24 and B04 — B0=24*
  - A3: Specify: 32-B=A — B0=31*, B0=30*, B0=29*, B0=28*
- B2 (rows 5–8):
  - Base: Specify: A08 and B08 — B0=08*
  - A1: Specify: A16 and B08 — B0=16*
  - A2: Specify: A24 and B08 — B0=24*
  - A3: B0=27*, B0=26*, B0=25*, Not Permitted
- B3 (rows 9–12):
  - Base: Specify: A08 and B12 — B0=08*
  - A1: Specify: A16 and B12 — B0=16*
  - A2: Specify: 32-B=A — B0=23*, B0=22*, B0=21*, B0=20*
  - A3: Not Permitted
- B4 (rows 13–16):
  - Base: Specify: A08 and B16 — B0=08*
  - A1: Specify: A16 and B16 — B0=16*
  - A2: B0=19*, B0=18*, B0=17*

Adapter Type

*The host-recognized port addresses are sequential, with the first Category A port (port A0) always being address 0 (with the exception of SNA, which is always 02). The first Category B port (port B0) is always the next sequential address after the last Category A port.

Figure 3-1. 3274 Model 1A, 21A, and 31A Category A and B Terminal Quantity Relationships

113 Extended Function Store

Model 1A: Enter one of the following to specify whether any, and which, Extended Function Store feature is installed:

0000[1][2] = No Extended Function Store feature is installed.

3622[1][2] = Extended Function Store feature type C1 (#3622) is installed.

5000[2] = Extended Function Store feature types C1 (#3622) and C3 (#3625) are installed.

5100[2] = Extended Function Store feature type C2 (#3623) is installed.

7000[1][2] = Extended Function Store feature types C1 (#3622) and D1 (#3627) are installed.

7800[1][2] = Extended Function Store feature types C1 (#3622) and D2 (#3628) are installed.

9000[2] = Extended Function Store feature types C1 (#3622), C3 (#3625), and D1 (#3627) are installed.

---

[1] Not valid for Configuration Support C.

[2] Not valid for Configuration Support T.

9100[2] = Extended Function Store feature types C2 (#3623) and D1 (#3627) are installed.

9800 = Extended Function Store feature types C1 (#3622), C3 (#3625), and D2 (#3628) are installed.

9900 = Extended Function Store feature types C2 (#3623) and D2 (#3628) are installed.

Model 21A: Enter A000.[1] [2]

Model 31A: Enter D000.

114 *IBM 3270 Personal Computer Attachment (Configuration Support C Only)*

Enter a 1 if an IBM 3270 Personal Computer Attachment will be attached to a 3278 Display Station connected to your 3274, and you intend to transfer data between the Personal Computer Attachment and the host; enter a 0 if not.

Note: If you answer 114 with a 1, you must answer sequence numbers 147 (Local Copy Function) and 162 (Structured Field and Attribute Processing) with a 1.

121 *Keyboard Language/Character Set I/O Interface Code*

Enter a 2-digit number (01 and 03 to 29) from Figure 3-2 specifying the keyboard language and character set I/O interface code being used. A 2-digit number must be entered. If necessary, use a leading zero; for example, to specify 7, enter 07.

131 *Typewriter Keyboard*

Enter a 0 if none of the attached 3178s, 3278s, or 3279s have a typewriter keyboard (#2715, 2717, 4621, 4627, 4640, or 4651); enter a 1 if any do.

132 *Data Entry Keyboard*

Enter a 0 if none of the attached 3178s, 3278s, or 3279s have a data entry keyboard (#2716 or 4622); enter a 1 if any do.

133 *Data Entry Keypunch Layout Keyboard*

Enter a 0 if none of the attached 3178s, 3278s, or 3279s have a data entry keypunch layout keyboard (#4623); enter a 1 if any do.

134 *APL Keyboard*

Enter a 0 if none of the attached 3178s, 3278s, or 3279s have an APL keyboard (#4626 or 4652); enter a 1 if any do.

Note: For Configuration Support A and B only, enter a 1 if neither an APL nor a text keyboard is attached to any 3178, 3278, or 3279, but you wish to display or print APL and/or text characters.

---

[1] Not valid for Configuration Support C.
[2] Not valid for Configuration Support T.

Sequence Number 121 Response	Keyboard Language	Character Set I/O Interface Code
01	English (U.S.)	English (U.S.)
03	Austrian/German	Austrian/German
04	Belgian	Belgian
05	Brazilian	Brazilian
06[2]	Canadian (French)	Canadian (French)
07	Danish	Danish/Norwegian
08[1,3]	Danish	Danish/Norwegian (Alternate)
09[3]	Finnish	Finnish/Swedish
10[1,3]	Finnish	Finnish/Swedish (Alternate)
11	French (QWERTY)	French
12	French (AZERTY)	French
13[1,3]	Austrian/German	Austrian/German (Alternate)
14	International	International
15	Italian	Italian
16	Japanese (English)	Japanese (English)
17	Japanese (Katakana)	Japanese (Katakana)
18[3]	Portuguese (not allowed with Configuration Support C)	Portuguese
19	Spanish	Spanish
20[1,3]	Spanish	Spanish (Alternate)
21	Spanish-speaking	Spanish-speaking
22	English (U.K.)	English (U.K.)
23	Norwegian	Danish/Norwegian
24	Swedish	Finnish/Swedish
25	EBCDIC (WT)	English (U.S.)
26[1,3]	Norwegian	Danish/Norwegian (Alternate)
27[1,3]	Swedish	Finnish/Swedish (Alternate)
28	Portuguese	Portuguese (Alternate)
29[2]	Canadian (Bilingual)	Canadian (Bilingual)

[1] Structured Field and Attribute Processing (SFAP-Sequence Number 162) is not supported with these languages.

[2] Canadian (Bilingual) is supported by Configuration Support T only. Canadian (French) is supported by Configuration Support A, B, and C only.

[3] Not supported by Configuration Support T.

Notes:

1. Keyboard layouts and character set I/O interface code information are given in IBM 3270 Information Display System: Character Set Reference, GA27-2837.

2. An alternate character set I/O Interface code should be selected only when compatibility with the 3271/3272/3275 data base is required. To facilitate later migration, all systems should be upgraded to the latest support 3270 level.

Figure 3-2. 3274 Model 1A, 21A, and 31A Keyboard Language and Character Set I/O Interface Code

135 Text Keyboard

Enter a 0 if none of the attached 3178s, 3278s, or 3279s have a text keyboard (#4629); enter a 1 if any do.

139 Keypad Selection (Configuration Support T Only)

Enter one of the following to specify the type of keypad you will be using on your 3290 Information Panel Display Station:

0   =   No keypad or the default keypad (National Language Numeric Keypad).

1−6   =   Reserved.

7   =   Program Function Keypad.

Note: If a nonzero response is specified for this sequence number, a 1 must be specified for sequence number 170.

141 Magnetic Character Set

Enter one of the following to specify the magnetic character set installed:

A = None

B = Numeric (3277-compatible)

C = Alphanumeric (auto entry for secure data)

D = Alphanumeric (auto entry for all data)

143 Host-Loadable Printer Authorization Matrix

Enter a 0 if a printer authorization matrix is not to be loaded from the host; enter a 1 if it is.

This matrix is defined by a user-written application program. When run, a host-loaded matrix will override any other printer authorization matrix. (See also sequence number 021.)

145 3289 Print Control

Enter a 0 if no 3289 Line Printer is attached or if a 3289 without the text print belt (#9496) is attached. Enter a 1 if a 3289 with the text print belt is attached.

147 Local-Copy Function

Enter a 1 for this sequence number in step 8 on the Initial Customizing Procedure Form. This function is not selectable; it is automatically included in your configuration.

3290: If you are using the local copy function on a 3290, you must specify a printer authorization matrix (see Appendix C).

Personal Computer Attachment: If an IBM 3270 Personal Computer Attachment is configured (sequence number 114=1), you *must* respond to 147 with a 1.

151 3274 Model Designation

Enter an A to specify a 3274 Model 1A. Enter a 1 to specify a Model 21A or 31A.

161 Color Convergence

Enter a 0 if no 3279 Color Display Stations that require color convergence are attached; enter a 1 if any are.

162 Structured Field and Attribute Processing (SFAP) (Configuration Support C Only)

Enter a 1 if APL, SFAP, or the LU Type 1 SNA character string (SCS) (3287 Printer with feature #9661) is used; enter a 0 if not.

If an IBM 3270 Personal Computer Attachment is configured (sequence number 114=1), you must respond to 162 with a 1.

SFAP is necessary if you are using the extended character set (Write Structured Field command or the Set Attribute, Start Field Extended, or Modify Field orders). (See 163 following.) LU Type 1 SCS supports extended color, extended highlighting (underscore), and PS on LU Type 1 printers with feature #9661.

If you enter a 0, 163—166 will not be asked.

163 Extended Character Set Adapter (Configuration Support C Only)

This is the number of terminals (displays and printers) that process the APL/Text functions and extended color, Programmed Symbols, and extended highlighting. Count one for each:

- 3230 Model 2
- 3262 Models 3 and 13
- 3268 Model 2
- 3278 with Extended Character Set Adapter feature (#3610)
- 3279 Models 2B, 3B, S2B, and S3G
- 3279 Models 02X and 03X with Extended Function Store feature (#3850)
- 3287 with Extended Character Set Adapter feature (#3610)

A 2-digit number must be entered. If necessary, use a leading zero; for example, to specify 8, enter 08.

Notes:

1. This number must not exceed the number of Category A terminals specified in sequence number 112.

2. If an IBM 3270 Personal Computer Attachment is configured (sequence number 114=1), each attachment must be considered a count, *unless* the associated display has been counted as a display with the Extended Character Set Adapter (feature #3610) installed.

3. If you respond 1 to this sequence number, you *must not* respond 08, 10, 13, 20, 26, or 27 to sequence number 121.

164 Programmed Symbols (PS) (Configuration Support C Only)

Enter a 1 if any attached terminals have a Programmed Symbols (PS) feature (#5781, 5782, or 5783) installed; enter a 0 if not.

165 Decompression (Configuration Support C Only)

Enter a 1 if you want to send compressed PS data; otherwise, enter a 0. [This sequence number is not asked if a 0 was specified for sequence number 164 (Programmed Symbols).]

Note: Decompressing data on a locally attached 3274 could cause performance degradation.

166 Attribute Select Keyboard (Configuration Support C Only)

Note: This sequence number will not be asked unless you specified a 1 for sequence number 131 (typewriter keyboard) or 134 (APL keyboard).

Enter one of the following to specify whether an attribute select typewriter keyboard (#4651), an attribute select typewriter/APL keyboard (#4652), or a typewriter overlay keyboard (#4640) is being used:

A =   None of these keyboards is being used.

B =   One or more of these keyboards are being used, but you do not wish to use the numeric lock function on *any* of them.

C =   One or more of these keyboards are being used, and you wish to use the numeric lock function on *all* of them.

170 3290 Information Panel Display Station (Configuration Support T Only)

Enter a 0 if no 3290 Information Panel Display Stations are attached; enter a 1 if any are.

If you enter a 0, 171 through 175 will not be asked.

|171 Multiple Interactive Screens (Configuration Support T Only)

A 2-digit number must be entered for each of the following; if you are not using multiple interactive screens, enter 10 zeros:

XX XX XX XX XX

Number of display terminals using five logical terminal addresses.

Number of display terminals using four logical terminal addresses.

Number of display terminals using three logical terminal addresses.

Number of display terminals using two logical terminal addresses.

First port designated for a display terminal with a multiple interactive screen. (This port cannot be port 00.)

See Appendix J for a detailed description of multiple interactive screens.

|173 3290 Options (Configuration Support T Only)

Each of the eight bits in this response must be specified either as 0 (zero) or 1. A 0 disables the particular 3290 option, and a 1 enables it.

X X X X X X X X

Bit 7 ┐
Bit 6 │
Bit 5 ├ Reserved
Bit 4 │
Bit 3 ┘
Bit 2 - Auto Form Feed after Local Copy
Bit 1 - Auto Form Feed before Local Copy
Bit 0 - Enable 3290 Local Copy Format Controls

Bit 0 - Enable 3290 Local Copy Format Controls

The 3290 Information Panel generates an SCS data stream to perform a local copy operation to a printer. If the printer does not have Save/Restore Format capability and the printer is operated in shared mode, that is, a local copy operation is permitted between brackets of an LU-1 session, there is a possibility that the format controls established by the host program will be destroyed by the local copy operation. Proper use of this bit will help alleviate the contention situation for establishing format controls. When the printer supports Save/Restore Format, this option has no effect; the 3290 will send format controls.

When bit 0 is set to 0, the 3290 will not send format controls to a printer that lacks Save/Restore Format capability. The 0 setting is the default and is applicable to those operating environments where the host program does not re-establish format controls with each Begin Bracket. Note that the format of the local copy output depends on the format controls established by the operator or host program.

When bit 0 is set to 1, the 3290 will send format controls to the printer, even though the printer lacks Save/Restore Format capability. This enables the local copy output to duplicate as closely as possible, the character image being copied from the 3290. The 1 setting is applicable to those operating environments where the printer is not shared or the host program re-establishes format controls with each Begin Bracket.

Bit 1 - Automatic Form Feed Before Local Copy

Specify bit 1 as a 0 (zero) if you do not want to generate an automatic form feed before a local copy operation is performed.

Specify bit 1 as a 1 if you want to generate an automatic form feed before a local copy operation is performed.

Bit 2 - Automatic Form Feed After Local Copy

Specify bit 2 as a 0 (zero) if you do not want to generate an automatic form feed after a local copy operation is performed.

Specify bit 2 as a 1 if you want to generate an automatic form feed after a local copy operation is performed.

Bits 3 through 7 - Reserved. Specify 0.

175 Password (Configuration Support T Only)

Enter the 6-digit password to allow permanent changes to the 3290 logical terminal definition table using setup level 3.

176 BSC Enhanced Communication Option (Configuration Support T Only)

Enter 0. Not applicable to A models.

201 Control Unit Address

Enter the 2-character hexadecimal control unit address; this information can be obtained from the system programmer at the host system location. The host system recognizes this address as the input/output address.

211 SCS Support

Enter a 1 if the LU Type 1 SNA character string (SCS) (3287 Printer with feature #9660, 3230 Printer, 3262 Line Printer, 3268 Printer, or 3289 Line Printer) is used; enter a 0 if not.

213   Between Bracket Printer Sharing

Enter a 0 if Between Bracket Printer Sharing is not allowed; enter a 1 if it is.

215   Physical Unit Identification (PUID)

The physical unit identification (PUID) is a 5-character code that identifies the control unit to the host in response to an SDLC XID command.

If the PUID is not used, enter 00000 for this sequence number in step 8 on the Initial Customizing Procedure Form.

If the PUID is used, each control unit in a network should be assigned a unique PUID. The PUID must be obtained from the system programmer and entered as the response to this sequence number in step 8 on the Initial Customizing Procedure Form.

301 through 362

For sequence numbers 301 through 362, fill in the appropriate boxes in step 8 of the Initial Customizing Procedure Form with the following entries:

301	Enter 00.
302	Enter 00.
305—352	Enter 0 in each box.
360	Enter 00 (Configuration Support C only).
361	Enter 00 (Configuration Support C only).
362	Enter 00000000 (Configuration Support C only).

900   Entry Acceptance

Sequence number 900, which appears as part of the sequence number 999 display, prompts the operator to enter a 1 if, after the entries are verified, all the responses are entered correctly. If incorrect responses are detected by the 3274, the 1 is automatically changed back to a 0 by the 3274, an operator code is displayed for the incorrect information, and incorrect entries are intensified.

901   Printer Authorization Matrix Acceptance

Sequence number 901, which appears as part of sequence number 022 (printer authorization matrix display), prompts the operator to enter a 1 if, after the entries are verified, all the responses are entered correctly. If unacceptable responses are detected by the 3274, the 1 is automatically changed back to a 0 by the 3274 and invalid entries are intensified.

999   Modify Procedure

Sequence number 999 displays all the responses entered during the customizing operation, permitting the operator to review the entries and to make any corrections needed. The Initial Customizing Procedure Form instructs the operator how to reply to this sequence number.

3274 Models 1B, 1D, 21B, 21D, and 31D

Use the following sequence numbers and instructions in conjunction with the Initial Customizing Procedure Form in Chapter 4 to customize 3274 Models 1B, 1D, 21B, 21D, and 31D.

001 Keyboard Validation

The response required for this sequence number is already entered on the form in step 4; it verifies that the keyboard at the 3178, 3278, or 3279 is operating properly. Note that the last two digits (digits following the space) in the response to sequence number 001 identify the validation number that must be used in the customizing procedure. This number must be equal to or greater than the validation number on the feature and system diskette labels.

Note: If a data entry keypunch layout keyboard is used, the New Line key is pressed when ENTER is specified. Also, the PF10 key is pressed when RESET is required; the PF8 key is pressed when New Line is required. See Figures 4-1 and 4-2 (in Chapter 4) for valid key positions and the differences just noted. Be sure to specify the keyboard type on the Initial Customizing Procedure Form.

011 Patch Request

The response required for this sequence number is already entered on the form in step 5. The service representative may use this sequence number to make a diskette patch request.

021 Printer Authorization Matrix

Enter a 0 in step 6 on the Initial Customizing Procedure Form if any of the following conditions applies:

- The printer authorization matrix is to be entered only by a host application program (a 1 must be specified in sequence number 143).

- All printers are to be used in system mode, and local-copy operations are not desired.

- No printers are to be attached to the system.

Enter a 1 if a matrix is to be defined, thereby causing sequence number 022 to be displayed. This matrix will be established for each 3274 IML, regardless of the response to sequence number 143.

022 Printer Authorization Matrix Specification

The printer authorization matrix is defined in sequence number 022. See Appendix C for detailed information on responding to sequence number 022.

Fill in the appropriate spaces on the Printer Authorization Matrix Form with a definition for each printer in your configuration, and attach it to the Initial Customizing Procedure Form. The definitions may be entered in any sequence. Also, definitions do not have to be entered successively; for example, you may enter definitions in groups 1, 2, and 3 of the form, skip groups 4 and 5, and continue at group 6.

Once a printer authorization matrix has been defined, sequence number 021 is no longer displayed when a customized 3274 Control Unit is being updated. Instead, the defined matrix is displayed. If the entire matrix is deleted, sequence number 021 will again be displayed during each updating procedure until a new matrix is defined. Any time the initial customizing procedure is performed, the sequence number 021 is displayed and the printer authorization matrix must be redefined if it is still required.

031 RPQ Diskettes Required

Enter the number of RPQ diskettes required (0, 1, 2, or 3) in step 7 on the Initial Customizing Procedure Form.

032 Request RPQ Parameter List (Configuration Support C and T Only)

Enter a 1 if you require the RPQ parameter list; enter a 0 if not. If you enter a 1 here, sequence number 033 (RPQ Parameters) will be displayed, with spaces for parameter information. If you enter a 0, 033 will not be displayed.

Note: An RPQ parameter list is required by certain RPQs. Specific information about this list, sequence number 033 format, and implementation is supplied with the RPQ.

111 Number of Category B Terminals (Configuration Support A, B, and C Only)

Enter a 2-digit number (00 to 16) specifying the number of Category B terminals that it is possible to attach to your 3274. (The actual number you have attached at any given time may be smaller than this number.) See sequence number 112 for a description of category types.

Notes:

1. Specify the number of Category B terminals in multiples of 4 (maximum of 16).

2. A 2-digit number must be entered. If necessary, use a leading zero; for example, to specify 4, enter 04.

3. The 3274 Models 1B, 1D, 21B, 21D, and 31D are multiaddress units wired during installation for a limited address range. If this limited address range and the specified number of Category A and B terminals do not match, the 3274 will not be able to complete a normal startup sequence.

112 Number of Category A Terminals

Enter a 2-digit number (08 to 32) specifying the number of Category A terminals that it is possible to attach to your 3274. (The actual number you have attached at any given time may be smaller than this number.) See Note 1.

Notes:

1. If any 3290 terminals are to be configured with multiple interactive screens, it is recommended that you specify the actual number of Category A terminals.

2. A 2-digit number must be entered. If necessary, use a leading zero; for example, to specify 8, enter 08.

3. Category A terminals:

   3178 Models C1 and C2
   3230 Model 2
   3262 Models 3 and 13
   3268 Model 2
   3278 Models 1, 2, 3, 4, and 5
   3278 Models 1−5 with IBM 3270 Personal Computer Attachment
   3279 All Models
   3287 Models 1 and 2 with 3274/3276 Attachment feature (#8331)
   3287 Models 1C and 2C
   3289 Models 1 and 2
   3290 Information Panel
   5210 Models G01 and G02

   Category B terminals:

   3277 Models 1 and 2
   3284 Models 1 and 2
   3286 Models 1 and 2
   3287 Models 1 and 2 with 3271/3272 Attachment feature (#8330)
   3288 Model 2

4. Specify the number of Category A terminals in multiples of 8 (maximum of 32) and the number of Category B terminals in multiples of 4 (maximum of 16), unless the sum of the two categories exceeds 32. (See Note 1.)

   If the sum of the two categories exceeds 32:

   •   For Category B terminals, specify the actual number of Category B terminals (sequence number 111).

   •   For Category A terminals, specify the difference between 32 and the number of Category B terminals (sequence number 111).

   Example: 13 Category B terminals and 17 Category A terminals would be specified as 13 and 19, respectively. Figure 3-3 shows the relationship and the ways to specify the various Category A and B terminal quantities. Note that, when Category A terminal adapters are added or removed, the host-recognized address of port B0 changes.

5. The 3274 Models 1B and 21B are multiaddress units wired during installation for a limited address range. If this limited address range and the specified number of Category A and B terminals do not match, the 3274 will not be able to complete a normal startup sequence.

Figure 3-3. 3274 Model 1B, 1D, 21B, 21D, and 31D Category A and B Terminal Quantity Relationships

*The host-recognized port addresses are sequential, with the first Category A port (port A0) always being address 0 (with the exception of SNA, which is always 02). The first Category B port (port B0) is always the next sequential address after the last Category A port.

113 *Extended Function Store*

Model 1B: Enter 0000.

Model 1D: Enter one of the following to specify whether any, and which, Extended Function Store feature is installed:

0000[1][2] = No Extended Function Store feature is installed.

3622[1][2] = Extended Function Store feature type C1 (#3622) is installed.

5000[2] = Extended Function Store feature types C1 (#3622) and C3 (#3625) are installed.

5100[2] = Extended Function Store feature type C2 (#3623) is installed.

7000[1][2] = Extended Function Store feature types C1 (#3622) and D1 (#3627) are installed.

7800[1][2] = Extended Function Store feature types C1 (#3622) and D2 (#3628) are installed.

---

[1] Not valid for Configuration Support C.

[2] Not valid for Configuration Support T.

9000[2] = Extended Function Store feature types C1 (#3622), C3 (#3625), and D1 (#3627) are installed.

9100[2] = Extended Function Store feature types C2 (#3623) and D1 (#3627) are installed.

9800 = Extended Function Store feature types C1 (#3622), C3 (#3625), and D2 (#3628) are installed.

9900 = Extended Function Store feature types C2 (#3623) and D2 (#3628) are installed.

Models 21B and 21D: Enter A000.[1][2]

Model 31D: Enter D000.

114 IBM 3270 Personal Computer Attachment (Configuration Support C Only)

Enter a 1 if an IBM 3270 Personal Computer Attachment will be attached to a 3278 Display Station connected to your 3274, and you intend to transfer data between the Personal Computer Attachment and the host; enter a 0 if not.

Note: If you answer 114 with a 1, you must answer sequence numbers 147 (Local Copy function) and 162 (Structured Field and Attribute Processing) with a 1.

121 Keyboard Language/Character Set I/O Interface Code

Enter a 2-digit number (01 and 03 to 29) from Figure 3-4 specifying the keyboard language and character set I/O interface code being used. A 2-digit number must be entered. If necessary, use a leading zero; for example, to specify 7, enter 07.

131 Typewriter Keyboard

Enter a 0 if none of the attached 3178s, 3278s, or 3279s have a typewriter keyboard (#2715, 2717, 4621, 4627, 4640, or 4651); enter a 1 if any do.

132 Data Entry Keyboard

Enter a 0 if none of the attached 3178s, 3278s, or 3279s have a data entry keyboard (#2716 or 4622); enter a 1 if any do.

133 Data Entry Keypunch Layout Keyboard

Enter a 0 if none of the attached 3178s, 3278s, or 3279s have a data entry keypunch layout keyboard (#4623); enter a 1 if any do.

---

[1]   Not valid for Configuration Support C.

[2]   Not valid for Configuration Support T.

Sequence Number 121 Response	Keyboard Language	Character Set I/O Interface Code
01	English (U.S.)	English (U.S.)
03	Austrian/German	Austrian/German
04	Belgian	Belgian
05	Brazilian	Brazilian
06[2]	Canadian (French)	Canadian (French)
07	Danish	Danish/Norwegian
08[1,3]	Danish	Danish/Norwegian (Alternate)
09[3]	Finnish	Finnish/Swedish
10[1,3]	Finnish	Finnish/Swedish (Alternate)
11	French (QWERTY)	French
12	French (AZERTY)	French
13[1,3]	Austrian/German	Austrian/German (Alternate)
14	International	International
15	Italian	Italian
16	Japanese (English)	Japanese (English)
17	Japanese (Katakana)	Japanese (Katakana)
18[3]	Portuguese (not allowed with Configuration Support C)	Portuguese
19	Spanish	Spanish
20[1,3]	Spanish	Spanish (Alternate)
21	Spanish-speaking	Spanish-speaking
22	English (U.K.)	English (U.K.)
23	Norwegian	Danish/Norwegian
24	Swedish	Finnish/Swedish
25	EBCDIC (WT)	English (U.S.)
26[1,3]	Norwegian	Danish/Norwegian (Alternate)
27[1,3]	Swedish	Finnish/Swedish (Alternate)
28	Portuguese	Portuguese (Alternate)
29[2]	Canadian (Bilingual)	Canadian (Bilingual)

[1] Structured Field and Attribute Processing (SFAP-Sequence Number 162) is not supported with these languages.

[2] Canadian (Bilingual) is supported by Configuration Support T only. Canadian (French) is supported by Configuration Support A, B, and C only.

[3] Not supported by Configuration Support T.

Notes:

1. *Keyboard layouts and character set I/O interface code information are given in* IBM 3270 Information Display System: Character Set Reference, *GA27-2837.*

2. *An alternate character set I/O Interface code should be selected only when compatibility with the 3271/3272/3275 data base is required. To facilitate later migration, all systems should be upgraded to the latest support 3270 level.*

Figure 3-4. 3274 Model 1B, 1D, 21B, 21D, and 31D Keyboard Language and Character Set I/O Interface Code

134 APL Keyboard (Models 1D, 21D, and 31D Only)

Enter a 0 if none of the attached 3178s, 3278s, or 3279s have an APL keyboard (#4626 or 4652); enter a 1 if any do.

Note: For Configuration Support A and B only, enter a 1 if neither an APL nor a text keyboard is attached to any 3178, 3278, or 3279, but you wish to display or print APL and/or text characters.

135 Text Keyboard (Models 1D, 21D, and 31D Only)

Enter a 0 if none of the attached 3178s, 3278s, or 3279s have a text keyboard (#4629); enter a 1 if any do.

|139 Keypad Selection (Configuration Support T Only)

Enter one of the following to specify the type of keypad you will be using on your 3290 Information Panel Display Station:

0   = No keypad or the default keypad (National Language Numeric Keypad).

1–6 = Reserved.

7   = Program Function Keypad.

Note: If a nonzero response is specified for this sequence number, a 1 must be specified for sequence number 170.

141 Magnetic Character Set

Enter one of the following to specify the magnetic character set installed:

A = None

B = Numeric (3277-compatible)

·|C = Alphanumeric (auto entry for secure data)

D = Alphanumeric (auto entry for all data)

143 Host-Loadable Printer Authorization Matrix

Enter a 0 if a printer authorization matrix is not to be loaded from the host; enter a 1 if it is.

This matrix is defined by a user-written application program. When run, a host-loaded matrix will override any other printer authorization matrix. (See also sequence number 021.)

145 3289 Print Control

Enter a 0 if no 3289 Line Printer is attached or if a 3289 without the text print belt (#9496) is attached. Enter a 1 if a 3289 with the text print belt is attached.

147   Local-Copy Function

Models 1B and 21B: Enter a 1 for this sequence number in step 8 on the Initial Customizing Procedure Form. This function is not selectable on the Models 1B and 21B; it is automatically included in your configuration.

Models 1D, 21D, and 31D: Enter a 0 if the local-copy function is not being used or a 1 if it is.

3290: If you want to use the local copy function on a 3290, enter a 1 and specify a printer authorization matrix (see Appendix C).

Notes:

1. If a 0 is entered, local copy by means of the Print key is nullified.

2. If an IBM 3270 Personal Computer Attachment is configured (sequence number 114=1), you must respond to 147 with a 1.

151   3274 Model Designation

Enter one of the following to specify the 3274 model:

B = Model 1B[1]

D = Model 1D

2 = Model 21B[1]

4 = Models 21D and 31D

161   Color Convergence

Enter a 0 if no 3279 Color Display Stations that require color convergence are attached; enter a 1 if any are.

162   Structured Field and Attribute Processing (SFAP) (Configuration Support C Only; Models 1D and 31D Only)

Enter a 1 if APL or SFAP is being used; enter a 0 if not.

If an IBM 3270 Personal Computer Attachment is configured (sequence number 114=1), you must respond to 162 with a 1.

SFAP is necessary if you are using the extended character set (Write Structured Field command or the Set Attribute, Start Field Extended, or Modify Field orders). (See 163 following.)

If you enter a 0, 163—166 will not be asked.

---

[1]   Not valid for Configuration Support C.

163 Extended Character Set Adapter (Configuration Support C Only; Models 1D and 31D Only)

This is the number of terminals (displays and printers) that process the APL/Text functions and extended color, Programmed Symbols, and extended highlighting. Count one for each:

- 3230 Model 2

- 3262 Models 3 and 13

- 3268 Model 2

- 3278 with Extended Character Set Adapter feature (#3610)

- 3279 Models 2B, 3B, S2B, and S3G

- 3279 Models 02X and 03X with Extended Function Store feature (#3850)

- 3287 with Extended Character Set Adapter feature (#3610)

A 2-digit number must be entered. If necessary, use a leading zero; for example, to specify 8, enter 08.

Notes:

1. This number must not exceed the number of Category A terminals specified in sequence number 112.

2. If an IBM 3270 Personal Computer Attachment is configured (sequence number 114=1), each attachment must be considered a count, *unless* the associated display has been counted as a display with the Extended Character Set Adapter (feature #3610) installed.

3. If you respond 1 to this sequence number, you *must not* respond 08, 10, 13, 20, 26, or 27 to sequence number 121.

164 Programmed Symbols (PS) (Configuration Support C Only; Models 1D and 31D Only)

Enter a 1 if any attached terminals have a Programmed Symbols (PS) feature (#5781, 5782, or 5783) installed; enter a 0 if not.

165 Decompression (Configuration Support C Only; Models 1D and 31D Only)

Enter a 1 if you want to send compressed PS data; otherwise, enter a 0. [This sequence number is not asked if a 0 was specified for sequence number 164 (Programmed Symbols).]

Note: Decompressing data on a locally attached 3274 could cause performance degradation.

166 Attribute Select Keyboard (Configuration Support C Only; Models 1D and 31D Only)

Note: This sequence number will not be asked unless you specified a 1 for sequence number 131 (typewriter keyboard) or 134 (APL keyboard).

Enter one of the following to specify whether an attribute select typewriter keyboard (#4651), an attribute select typewriter/APL keyboard (#4652), or a typewriter overlay keyboard (#4640) is being used:

A =   None of these keyboards is being used.

B =   One or more of these keyboards are being used, but you do not wish to use the numeric lock function on *any* of them.

C =   One or more of these keyboards are being used, and you wish to use the numeric lock function on *all* of them.

170 3290 Information Panel Display Station (Configuration Support T Only)

Enter a 0 if no 3290 Information Panel Display Stations are attached; enter a 1 if any are.

If you enter a 0, 171 through 175 will not be asked.

171 Multiple Interactive Screens (Configuration Support T Only)

A 2-digit number must be entered for each of the following; if you are not using multiple interactive screens, enter 10 zeros:

XX   XX   XX   XX   XX

Number of display terminals using five logical terminal addresses.

Number of display terminals using four logical terminal addresses.

Number of display terminals using three logical terminal addresses.

Number of display terminals using two logical terminal addresses.

First port designated for a display terminal with a multiple interactive screen. (This port cannot be port 00.)

See Appendix J for a detailed description of multiple interactive screens.

|173   3290 Options (Configuration Support T Only)

Each of the eight bits in this response must be specified either as 0 (zero) or 1. A 0 disables the particular 3290 option, and a 1 enables it.


```
X   X   X   X   X   X   X   X
                        │   └──Bit 7 ──────┐
                        └──────── Bit 6     │
                    └──────────── Bit 5     ├──Reserved
                └──────────────── Bit 4     │
            ──────────────────────Bit 3 ────┘
        └──────────────────────── Bit 2 -  Auto Form Feed after Local Copy
    └────────────────────────────── Bit 1 -  Auto Form Feed before Local Copy
└────────────────────────────────── Bit 0 -  Enable 3290 Local Copy Format
                                             Controls
```

Bit 0   –   Enable 3290 Local Copy Format Controls

The 3290 Information Panel generates an SCS data stream to perform a local copy operation to a printer. If the printer does not have Save/Restore Format capability and the printer is operated in shared mode, that is, a local copy operation is permitted between brackets of an LU-1 session, there is a possibility that the format controls established by the host program will be destroyed by the local copy operation. Proper use of this bit will help alleviate the contention situation for establishing format controls. When the printer supports Save/Restore Format, this option has no effect; the 3290 will send format controls.

When bit 0 is set to 0, the 3290 will not send format controls to a printer that lacks Save/Restore Format capability. The 0 setting is the default and is applicable to those operating environments where the host program does not re-establish format controls with each Begin Bracket. Note that the format of the local copy output depends on the format controls established by the operator or host program.

When bit 0 is set to 1, the 3290 will send format controls to the printer, even though the printer lacks Save/Restore Format capability. This enables the local copy output to duplicate as closely as possible, the character image being copied from the 3290. The 1 setting is applicable to those operating environments where the printer is not shared or the host program re-establishes format controls with each Begin Bracket.

Bit 1   –   Automatic Form Feed Before Local Copy

Specify bit 1 as a 0 (zero) if you do not want to generate an automatic form feed before a local copy operation is performed.

Specify bit 1 as a 1 if you want to generate an automatic form feed before a local copy operation is performed.

Bit 2 - Automatic Form Feed After Local Copy

Specify bit 2 as a 0 (zero) if you do not want to generate an automatic form feed after a local copy operation is performed.

Specify bit 2 as a 1 if you want to generate an automatic form feed after a local copy operation is performed.

Bits 3 through 7 - Reserved. Specify 0.

175 Password (Configuration Support T Only)

Enter the 6-digit password to allow permanent changes to the 3290 logical terminal definition table using setup level 3.

176 BSC Enhanced Communication Option (Configuration Support T Only)

Enter 0. Not applicable to B and D models.

201 through 362

For sequence numbers 201 through 352, fill in the appropriate boxes in step 8 of the Initial Customizing Procedure Form with the following entries:

201	Enter 00.
211	Enter 0.
213	Enter 0.
215	Enter 00000.
301	Enter 00.
302	Enter 00.
305—352	Enter 0 in each box.
360	Enter 00 (Configuration Support C only).
361	Enter 00 (Configuration Support C only).
362	Enter 00000000 (Configuration Support C only).

900 Entry Acceptance

Sequence number 900, which appears as part of the sequence number 999 display, prompts the operator to enter a 1 if, after the entries are verified, all the responses are entered correctly. If incorrect responses are detected by the 3274, the 1 is automatically changed back to a 0 by the 3274, an operator code is displayed for the incorrect information, and incorrect entries are intensified.

901 Printer Authorization Matrix Acceptance

Sequence number 901, which appears as part of sequence number 022 (printer authorization matrix display), prompts the operator to enter a 1 if, after the entries are verified, all the responses are entered correctly. If unacceptable responses are detected by the 3274, the 1 is automatically changed back to a 0 by the 3274 and invalid entries are intensified.

999 Modify Procedure

Sequence number 999 displays all the responses entered during the customizing operation, permitting the operator to review the entries and to make any corrections needed. The Initial Customizing Procedure Form instructs the operator how to reply to this sequence number.

3274 Models 1C, 21C, 31C, and 51C

When a Model 1C, 21C, 31C, or 51C is being customized, some sequence numbers are not asked. The responses to those sequence numbers are filled in internally by the 3274 and displayed for the operator during the verification step of the initial customizing procedure (Initial Customizing Procedure Form, step 9). Many of these defaulted responses are determined by the response given to sequence number 343 (Communication Interface Options). Figure 3-5 shows those default values. Figure 3-5 does not list all sequence numbers that may be necessary to customize a 3274 Model C. Use the remainder of this chapter to determine the proper responses to sequence numbers that are not listed in the figure.

Find your response to sequence number 343 at the top of the chart. The default values are given in the shaded blocks in the column for that response. The sequence numbers are listed in the left column of the chart. Use the values in the shaded blocks as the responses to the sequence numbers in step 8 of the Initial Customizing Procedure Form. Blank blocks indicate that you should use the sequence number explanations in the remainder of this chapter to decide on the proper response.

Other sequence numbers are conditionally defaulted. Those default values and conditions are as follows:

Sequence Number	Default Value	Condition
112	08	If 151=E
121	02	If 321=1
131	1	If 321=1
132	0	If 321=1
133	0	If 321=1 or 121=17
134	0	If 321=1
135	0	If 321=1 or 121 ≠ 01
143	0	If 147=0
147	1	If 331=1
162	0	If 321=1
163	00	If 321=1 or 162=0
164	0	If 321=1 or 162=0
165	0	If 321=1 or 162=0 or 164=0
166	A	If 321=1 or 162=0
211	0	If 331=0
213	0	If 331=0
215	00000	If 331=0

You may eliminate many of the sequence numbers for your configuration by using the preceding information to fill in the default values in step 8 on the Initial Customizing Procedure Form. After filling in the default values, you can fill in unanswered sequence numbers by using the explanations in the remainder of this chapter.

Use the following descriptions in conjunction with the Initial Customizing Procedure Form in Chapter 4 to customize a 3274 Model 1C, 21C, 31C, or 51C.

Response to Sequence Number 343

Sequence Number	External Modem (Nonswitched) Feature #3701 or CCITT V.35 Feature #1550 (Models 1C, 21C, 31C, and 51C)	Digital Data Service Adapter Feature #5650/5651 (Models 1C, 21C, 31C, and 51C)	X.21 Nonswitched Feature #5655 (Models 1C, 21C, 31C, and 51C)	X.21 Switched Feature #5656 (Model 51C)	External Modem (Switched) Feature #3701 (Model 51C)	1200-bps Integrated Modem (Nonswitched) Feature #5500 (Model 51C)	1200-bps Integrated Modem (Switched) with Auto Answer Feature #5501 (Model 51C)	1200-bps Integrated Modem (Switched) with Manual Answer Feature #5502 (Model 51C)	1200-bps Integrated Modem with SNBU and Manual Answer Feature #5507 (Model 51C)	1200-bps Integrated Modem with SNBU and Auto Answer Feature #5508 (Model 51C)	Loop Attachment Feature #4850 (Model 51C)	Integrated Modem Features #5640, 5740, 5840, and 5842 (Models 31C and 51C)
	0	1	2	3*	4	5	6	7	8	9	A*	B
111*											00	
112											08	
301			00	00	00		00	00			00	
302												
305			0	0	0		0	0			0	
310	0	0	0	0		0	0	0	0	0	0	0
311		0	0	0		0	0	0	0	0	0	0
313			0	0		1	1	1	1	1	0	
314		0	0	0	0		0	0			0	
317		0	0	0	0	0	0	0			0	0
318		0	0	0	0	0	0	0	0	0	0	0
321			0	0								
331			1	1	1		1	1			1	
342		0	0	0	0		0	0			0	1
345	1	1	1	0		1	1	1	1	1	1	1
347*	0	0	0	0	0	0	0	0	0	0		0
351				1		0	0	0	0	0	1	
352*											0	
360*	00	00	00		00	00	00	00	00	00	00	00
361*	00	00	00		00	00	00	00	00	00	00	00
362*	← 00000000 →				← 00000000 →							→

343 ← Response

*Not applicable to Configuration Support T.

Figure 3-5. Default Values

001   Keyboard Validation

The response required for this sequence number is already entered on the form in
step 4; it verifies that the keyboard at the 3178, 3278, or 3279 is operating
properly. Note that the last two digits (digits following the space) in the response
to sequence number 001 identify the validation number that must be used in the
customizing procedure. This number must be equal to or greater than the
validation number on the feature and system diskette labels.

Note: If a data entry keypunch layout keyboard is used, the New Line key is
pressed when ENTER is specified. Also, the PF10 key is pressed when RESET is
required; the PF8 key is pressed when New Line is required. See Figures 4-1 and
4-2 (in Chapter 4) for valid key positions and the differences just noted. Be sure
to specify the keyboard type on the Initial Customizing Procedure Form.

011   Patch Request

The response required for this sequence number is already entered on the form in
step 5. The service representative may use this sequence number to make a
diskette patch request.

021   Printer Authorization Matrix

Enter a 0 in step 6 on the Initial Customizing Procedure Form if any of the
following conditions applies:

- The printer authorization matrix is to be entered only by a host application
  program (a 1 must be specified in sequence number 143).

- All printers are to be used in system mode, and local-copy operations are not
  desired.

- No printers are to be attached to the system.

Enter a 1 if a matrix is to be defined, thereby causing sequence number 022 to be
displayed. This matrix will be established for each 3274 IML, regardless of the
response to sequence number 143.

022   Printer Authorization Matrix Specification

The printer authorization matrix is defined in sequence number 022. See
Appendix C for detailed information on responses to sequence number 022.

Fill in the appropriate spaces on the Printer Authorization Matrix Form with a
definition for each printer in your configuration, and attach it to the Initial
Customizing Procedure Form. The definitions may be entered in any sequence.
Also, definitions do not have to be entered successively; for example, you may
enter definitions in groups 1, 2, and 3 of the form, skip groups 4 and 5, and
continue at group 6.

Once a printer authorization matrix has been defined, sequence number 021 is no
longer displayed when a customized 3274 Control Unit is being updated. Instead,
the defined matrix is displayed. If the entire matrix is deleted, sequence number
021 will again be displayed during each updating procedure until a new matrix is
defined. Any time the initial customizing procedure is performed, the sequence
number 021 is displayed and the printer authorization matrix must be redefined if
it is still required.

031 RPQ Diskettes Required

Enter the number of RPQ diskettes required (0, 1, 2, or 3) in step 7 on the Initial Customizing Procedure Form.

|032 Request RPQ Parameter List (Configuration Support C and T Only)

Enter a 1 if you require the RPQ parameter list; enter a 0 if not. If you enter a 1 here, sequence number 033 (RPQ Parameters) will be displayed, with spaces for parameter information. If you enter a 0, 033 will not be displayed.

Note: An RPQ parameter list is required by certain RPQs. Specific information about this list, sequence number 033 format, and implementation is supplied with the RPQ.

|111 Number of Category B Terminals (Configuration Support A, B, and C Only)

Models 1C, 21C, and 31C: Enter a 2-digit number (00 to 16) specifying the number of Category B terminals that it is possible to attach to your 3274. (The actual number you have attached at any given time may be smaller than this number.)

Model 51C: If category B terminals are to be used, enter 04 in response to this sequence number in step 8 on the Initial Customizing Procedure Form.

Note: A Model 51C with the Loop Adapter feature (#4850) does not allow Category B terminals to be attached.

See sequence number 112 for a description of category types.

Notes:

1. A 2-digit number must be entered. If necessary, use a leading zero; for example, to specify 4, enter 04.

2. Specify the number of Category B terminals in multiples of 4 (maximum of 16).

112 Number of Category A Terminals

Models 1C, 21C, and 31C: Enter a 2-digit number (08 to 32) specifying the number of Category A terminals that it is possible to attach to your 3274. (The actual number you have attached at any given time may be smaller than this number.)

Notes:

1. If any 3290 terminals are to be configured for multiple interactive screens, it is recommended that you specify the actual number of Category A terminals.

2. A 2-digit number must be entered. If necessary, use a leading zero; for example, to specify 8, enter 08.

3. Category A terminals:

> 3178 Models C1 and C2
> 3230 Model 2
> 3262 Models 3 and 13
> 3268 Model 2
> 3278 Models 1, 2, 3, 4, and 5
> 3278 Models 1−5 with IBM 3270 Personal Computer Attachment
> 3279 Models 2A, 2B, 3A, and 3B
> 3287 Models 1 and 2 with 3274/3276 Attachment feature (#8331)
> 3287 Models 1C and 2C
> 3289 Models 1 and 2
> 3290 Information Panel
> 5210 Models G01 and G02

Category B terminals:

> 3277 Models 1 and 2
> 3284 Models 1 and 2
> 3286 Models 1 and 2
> 3287 Models 1 and 2 with 3271/3272 Attachment feature (#8330)
> 3288 Model 2

4. Specify the number of Category A terminals in multiples of 8 (maximum of 32) and the number of Category B terminals in multiples of 4 (maximum of 16), unless the sum of the two categories exceeds 32. See Note 1.

If the sum of the two categories exceeds 32:

- For Category B terminals, specify the actual number of Category B terminals (sequence number 111).

- For Category A terminals, specify the difference between 32 and the number of Category B terminals (sequence number 111).

Example: 13 Category B terminals and 17 Category A terminals would be specified as 13 and 19, respectively. Figure 3-6 shows the relationship and the ways to specify the various Category A and B terminal quantities. Note that, when Category A terminal adapters are added or removed, the host-recognized address of port B0 changes.

Model 51C: Enter a 08 in step 8 on the Initial Customizing Procedure Form. Although not asked for the Model 51C, the sequence number is shown on the verification frame with 08 filled in.

Number of Category A Terminals

| | | Base | | | A1 | | A2 | | A3 | Adapter Type |

Quantity → Base → ← A1 → ← A2 → ← A3 → Adapter Type

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 |

0 | Specify: A08 and B00 | Specify: A16 and B00 | Specify: A24 and B00 | Specify: A32 and B00

Number of Category B Terminals

B1:
1
2
3
4

Note: *The 51C is limited to eight A devices and four B devices.*

Specify: A08 and B04 — B0=08*
Specify: A16 and B04 — B0=16*
Specify: A24 and B04 — B0=24*
Specify: 32-B=A — B0=31* B0=30* B0=29* B0=28*

B2:
5
6
7
8

Specify: A08 and B08 — B0=08*
Specify: A16 and B08 — B0=16*
Specify: A24 and B08 — B0=24*
B0=27* B0=26* B0=25*

B3:
9
10
11
12

Specify: A08 and B12 — B0 08*
Specify: A16 and B12 — B0 16*
Specify: 32-B=A — B0=23* B0=22* B0=21* B0=20*
Not Permitted

B4:
13
14
15
16

Specify: A08 and B16 — B0 08*
Specify: A16 and B16 — B0=16*
B0=19* B0=18* B0=17*

Adapter Type

*The host-recognized port addresses are sequential, with the first Category A port (port A0) always being address 0 (with the exception of SNA, which is always 02). The first Category B port (port B0) is always the next sequential address after the last Category A port.

Figure 3-6. 3274 Model 1C, 21C, 31C, and 51C Category A and B Terminal Quantity Relationships

113 Extended Function Store

Model 1C: Enter one of the following to specify whether any, and which, Extended Function Store feature is installed:

0000[1][2] = No Extended Function Store feature is installed.

3622[1][2] = Extended Function Store feature type C1 (#3622) is installed.

5000[2] = Extended Function Store feature types C1 (#3622) and C3 (#3625) are installed.

5100[2] = Extended Function Store feature type C2 (#3623) is installed.

7000[1][2] = Extended Function Store feature types C1 (#3622) and D1 (#3627) are installed.

7800[1][2] = Extended Function Store feature types C1 (#3622) and D2 (#3628) are installed.

9000[2] = Extended Function Store feature types C1 (#3622), C3 (#3625), and D1 (#3627) are installed.

---

[1] Not valid for Configuration Support C.

[2] Not valid for Configuration Support T.

9100[2] = Extended Function Store feature types C2 (#3623) and D1 (#3627) are installed.

9800 = Extended Function Store feature types C1 (#3622), C3 (#3625), and D2 (#3628) are installed.

9900 = Extended Function Store feature types C2 (#3623) and D2 (#3628) are installed.

Model 21C: Enter A000.[1] [2]

Model 31C: Enter D000.

Model 51C: Enter one of the following to specify whether any, and which, Extended Function Store feature is installed:

A000[2] = No extended function store feature is installed.

B000[2] = Extended Function Store feature type D1 (#3630) is installed.

C000 = Extended Function Store feature types D1 (#3630) and D3 (#3631) are installed.

D000 = Extended Function Store feature type D2 (#3632) is installed, or Extended Function Store type D4 (#1800) is installed.

114 IBM 3270 Personal Computer Attachment (Configuration Support C Only)

Enter a 1 if an IBM 3270 Personal Computer Attachment will be attached to a 3278 Display Station connected to your 3274, and you intend to transfer data between the Personal Computer Attachment and the host; enter a 0 if not.

Note: If you answer 114 with a 1, you must answer sequence numbers 147 (Local Copy Function) and 162 (Structured Field and Attribute Processing) with a 1.

121 Keyboard Language/Character Set I/O Interface Code

Enter a 2-digit number (01 to 29) from Figure 3-7 specifying the keyboard language and character set I/O interface code being used. A 2-digit number must be entered. If necessary, use a leading zero; for example, to specify 7, enter 07.

131 Typewriter Keyboard

Enter a 0 if none of the attached 3178s, 3278s, or 3279s have a typewriter keyboard (#2715, 2717, 4621, 4624, 4627, 4628, 4640, or 4651); enter a 1 if any do.

132 Data Entry Keyboard

Enter a 0 if none of the attached 3178s, 3278s, or 3279s have a data entry keyboard (#2716 or 4622); enter a 1 if any do.

---

[1]   Not valid for Configuration Support C.
[2]   Not valid for Configuration Support T.

Sequence Number 121 Response	Keyboard Language	Character Set I/O Interface Code
01	English (U.S.) EBCDIC	English (U.S.) EBCDIC
02[1,3]	English (U.S.) ASCII	English (U.S.) ASCII
03	Austrian/German	Austrian/German
04	Belgian	Belgian
05	Brazilian	Brazilian
06[2]	Canadian (French)	Canadian (French)
07	Danish	Danish/Norwegian
08[1,3]	Danish	Danish/Norwegian (Alternate)
09[3]	Finnish	Finnish/Swedish
10[1,3]	Finnish	Finnish/Swedish (Alternate)
11	French (QWERTY)	French
12	French (AZERTY)	French
13[1,3]	Austrian/German	Austrian/German (Alternate)
14	International	International
15	Italian	Italian
16	Japanese (English)	Japanese (English)
17	Japanese (Katakana)	Japanese (Katakana)
18[3]	Portuguese (not allowed with Configuration Support C)	Portuguese
19	Spanish	Spanish
20[1,3]	Spanish	Spanish (Alternate)
21	Spanish-speaking	Spanish-speaking
22	English (U.K.)	English (U.K.)
23	Norwegian	Danish/Norwegian
24	Swedish	Finnish/Swedish
25	EBCDIC (WT)	English (U.S.)
26[1,3]	Norwegian	Danish/Norwegian (Alternate)
27[1,3]	Swedish	Finnish/Swedish (Alternate)
28	Portuguese	Portuguese (Alternate)
29[2]	Canadian (Bilingual)	Canadian (Bilingual)

[1] Structured Field and Attribute Processing (SFAP-sequence number 162) is not supported with these languages.

[2] Canadian (Bilingual) is supported by Configuration Support T only. Canadian (French) is supported by Configuration Support A, B, and C only.

[3] Not supported by Configuration Support T.

Notes:

1. *Keyboard layouts and character set I/O interface code information are given in* IBM 3270 Information Display System: Character Set Reference, *GA27-2837.*

2. *All character set I/O interface codes are EBCDIC except English (U.S.) ASCII.*

3. *An alternate character set I/O Interface code should be selected only when compatibility with the 3271/3272/3275 data base is required. To facilitate later migration, all systems should be upgraded to the latest support 3270 level.*

Figure 3-7.   3274 Model 1C, 21C, 31C, and 51C Keyboard Language and Character Set I/O Interface Code

133 Data Entry Keypunch Layout Keyboard

Enter a 0 if none of the attached 3178s, 3278s, or 3279s have a data entry keypunch layout keyboard (#4623); enter a 1 if any do.

134 APL Keyboard

Enter a 0 if none of the attached 3178s, 3278s, or 3279s have an APL keyboard (#4626 or 4652); enter a 1 if any do.

Note: For Configuration Support A and B only, enter a 1 if neither an APL nor a text keyboard is attached to any 3278 or 3279, but you wish to display or print APL and/or text characters.

135 Text Keyboard

Enter a 0 if none of the attached 3178s, 3278s, or 3279s have a text keyboard (#4629); enter a 1 if any do.

139 Keypad Selection (Configuration Support T Only)

Enter one of the following to specify the type of keypad you will be using on your 3290 Information Panel Display Station:

0 = No keypad or the default keypad (National Language Numeric Keypad).

1-6 = Reserved.

7 = Program Function Keypad.

Note: If a nonzero response is specified for this sequence number, a 1 must be specified for sequence number 170.

141 Magnetic Character Set

Enter one of the following to specify the magnetic character set installed:

A = None

B = Numeric (3277-compatible)

C = Alphanumeric (auto entry for secure data)

D = Alphanumeric (auto entry for all data)

143 Host-Loadable Printer Authorization Matrix

Enter a 0 if a printer authorization matrix is not to be loaded from the host; enter a 1 if it is.

This matrix is defined by a user-written application program. When run, a host-loaded matrix will override any other printer authorization matrix. (See also sequence number 021.)

145 3289 Print Control

Enter a 0 if no 3289 Line Printer is attached or if a 3289 without the text print belt (#9496) is attached. Enter a 1 if a 3289 with the text print belt is attached.

147 Local-Copy Function

BSC: Enter a 0 if the local-copy function Print key is not being used; enter a 1 if it is.

3290: If you want to use the local copy function on a 3290, enter a 1 and specify a printer authorization matrix (see Appendix C).

Note: If a 0 is entered, local copy by means of the Print key and the host Copy command are nullified.

If an IBM 3270 Personal Computer Attachment is configured (sequence number 114=1), you *must* respond to 147 with a 1.

SDLC: Enter a 1 for this sequence number in step 8 on the Initial Customizing Procedure Form. This function is not selectable for SDLC and is automatically included in your configuration.

151 3274 Model Designation

Enter one of the following to specify the 3274 model:

C = Model 1C

E = Model 51C

3 = Models 21C and 31C

161 Color Convergence

Enter a 0 if no 3279 Color Display Stations that require color convergence are attached; enter a 1 if any are.

162 Structured Field and Attribute Processing (SFAP) (Configuration Support C Only)

Enter a 1 if APL, SFAP, or the LU Type 1 SNA character string (SCS) (3287 Printer with feature #9661) is used; enter a 0 if not.

If an IBM 3270 Personal Computer Attachment is configured (sequence number 114=1), you must respond to 162 with a 1.

SFAP is necessary if you are using the extended character set (Write Structured Field command or the Set Attribute, Start Field Extended, or Modify Field orders). (See 163 following.) LU Type 1 SCS supports extended color, extended highlighting (underscore), and PS on LU Type 1 printers with feature #9661.

If you enter a 0, 163—166 will not be asked.

163 Extended Character Set Adapter (Configuration Support C Only)

This is the number of terminals (displays and printers) that process the APL/Text functions and extended color, Programmed Symbols, and extended highlighting. Count one for each:

- 3230 Model 2

- 3262 Models 3 and 13

- 3268 Model 2

- 3278 with Extended Character Set Adapter feature (#3610)

- 3279 Models 2B, 3B, S2B, and S3G

- 3279 Models 02X and 03X with Extended Function Store feature (#3850)

- 3287 with Extended Character Set Adapter feature (#3610)

A 2-digit number must be entered. If necessary, use a leading zero; for example, to specify 8, enter 08.

Notes:

1. This number must not exceed the number of Category A terminals specified in sequence number 112.

2. If an IBM 3270 Personal Computer Attachment is configured (sequence number 114=1), each attachment must be considered a count, *unless* the associated display has been counted as a display with the Extended Character Set Adapter (feature 3610) installed.

3. If you respond 1 to this sequence number, you *must not* respond 08, 10, 13, 20, 26, or 27 to sequence number 121.

164 Programmed Symbols (PS) (Configuration Support C Only)

Enter a 1 if any attached terminals have Programmed Symbols (PS) features (#5781, 5782, or 5783) installed; enter a 0 if not.

165 Decompression (Configuration Support C Only)

Enter a 1 if you want to send compressed PS data; otherwise, enter a 0. [This sequence number is not asked if a 0 was specified for 164 (Programmed Symbols).]

166 *Attribute Select Keyboard (Configuration Support C Only)*

Note: This sequence number will not be asked unless you specified a 1 for sequence number 131 (typewriter keyboard) or 134 (APL keyboard).

Enter one of the following to specify whether an attribute select typewriter keyboard (#4651), an attribute select typewriter/APL keyboard (#4652), or a typewriter overlay keyboard (#4640) is being used:

A =   None of these keyboards is being used.

B =   One or more of these keyboards are being used, but you do not wish to use the numeric lock function on *any* of them.

C =   One or more of these keyboards are being used, and you wish to use the numeric lock function on *all* of them.

170 *3290 Information Panel Display Station (Configuration Support T Only)*

Enter a 0 if no 3290 Information Panel Display Stations are attached; enter a 1 if any are.

If you enter a 0, 171 through 176 will not be asked.

171 *Multiple Interactive Screens (Configuration Support T Only)*

A 2-digit number must be entered for each of the following; if you are not using multiple interactive screens, enter 10 zeros:

```
XX    XX    XX    XX    XX
```

Number of display terminals using five logical terminal addresses.

Number of display terminals using four logical terminal addresses.

Number of display terminals using three logical terminal addresses.

Number of display terminals using two logical terminal addresses.

First port designated for a display terminal with a multiple interactive screen. (This port cannot be port 00.)

See Appendix J for a detailed description of multiple interactive screens.

|173   3290 Options (Configuration Support T Only)

Each of the eight bits in this response must be specified either as 0 (zero) or 1. A 0 disables the particular 3290 option, and a 1 enables it.

```
X   X   X   X   X   X   X   X
                            └─ Bit 7 ──────┐
                          └─── Bit 6       │
                        └───── Bit 5       ├─ Reserved
                      └─────── Bit 4       │
                    └───────── Bit 3 ──────┘
                └─────────────── Bit 2 -  Auto Form Feed after Local Copy
              └───────────────── Bit 1 -  Auto Form Feed before Local Copy
            └─────────────────── Bit 0 -  Enable 3290 Local Copy Format
                                          Controls
```

Bit 0   -   Enable 3290 Local Copy Format Controls

The 3290 Information Panel generates an SCS data stream to perform a local copy operation to a printer. If the printer does not have Save/Restore Format capability and the printer is operated in shared mode, that is, a local copy operation is permitted between brackets of an LU-1 session, there is a possibility that the format controls established by the host program will be destroyed by the local copy operation. Proper use of this bit will help alleviate the contention situation for establishing format controls. When the printer supports Save/Restore Format, this option has no effect; the 3290 will send format controls.

When bit 0 is set to 0, the 3290 will not send format controls to a printer that lacks Save/Restore Format capability. The 0 setting is the default and is applicable to those operating environments where the host program does not re-establish format controls with each Begin Bracket. Note that the format of the local copy output depends on the format controls established by the operator or host program.

When bit 0 is set to 1, the 3290 will send format controls to the printer, even though the printer lacks Save/Restore Format capability. This enables the local copy output to duplicate as closely as possible, the character image being copied from the 3290. The 1 setting is applicable to those operating environments where the printer is not shared or the host program re-establishes format controls with each Begin Bracket.

Bit 1   -   Automatic Form Feed Before Local Copy

Specify bit 1 as a 0 (zero) if you do not want to generate an automatic form feed before a local copy operation is performed.

Specify bit 1 as a 1 if you want to generate an automatic form feed before a local copy operation is performed.

Bit 2 – Automatic Form Feed After Local Copy

Specify bit 2 as a 0 (zero) if you do not want to generate an automatic form feed after a local copy operation is performed.

Specify bit 2 as a 1 if you want to generate an automatic form feed after a local copy operation is performed.

Bits 3 through 7 - Reserved. Specify 0.

175 Password (Configuration Support T Only)

Enter the 6-digit password to allow permanent changes to the 3290 logical terminal definition table using setup level 3.

176 BSC Enhanced Communication Option (Configuration Support T Only)

Specify a 1 if:

1. You have 3290 Information Panel Display Stations attached.

and

2. Your system is capable of handling enhanced BSC protocols in response to outbound transmissions of Write Acknowledgments (BSC WACK).

The following IBM program products support BSC WACK. Specify a 1 if you use any of them:

ACF/NCP Version 1, Release 2 and higher (CICS/VS, and IMS/VS, using VTAM or TCAM and ACF/NCP are supported.)

ACF/VTAM Version 2, Release 1 and higher (4321/4331 Communication Adapter*)

ACF/VTAME

CICS/VS Version 1, Release 6 and higher using BTAM

VM/370 SP Release 3 and higher

*Terminals attached through 370X Communication Controllers are supported in the ACF/NCP releases indicated above.

Specify a 0 if:

• You do not have 3290 Information Panel Display Stations attached.

• Your system is not capable of handling BSC WACK.

• Your system has IMS/VS using BTAM

• Your system has TCAM or ACF/TCAM using 370X EP

You must ensure that the program products being used are at compatible levels and support the required display functions.

201

Enter 00 for this sequence number in step 8 on the Initial Customizing Procedure Form.

211 SCS Support (SDLC Only)

Enter a 1 if the LU Type 1 SNA character string (SCS) (3287 Printer with feature #9660, 3230 Printer, 3262 Line Printer, 3268 Printer, or 3289 Line Printer) is used; enter a 0 if not.

213 Between Bracket Printer Sharing (SDLC Only)

Enter a 0 if Between Bracket Printer Sharing is not allowed; enter a 1 if it is.

215 Physical Unit Identification (PUID) (SDLC Only)

The physical unit identification (PUID) is a 5-character code that identifies the control unit to the host in response to an SDLC XID command. It is required if the 3274 is to be used on a switched data link.

If the PUID is not used, enter 00000 for this sequence number in step 8 on the Initial Customizing Procedure Form.

If the PUID is used, each control unit in a network should be assigned a unique PUID. The PUID must be obtained from the system programmer and entered as the response to this sequence number in step 8 on the Initial Customizing Procedure Form.

301 Control Unit Number (BSC Only)

Enter the 2-digit decimal control unit number. Obtain the polling address (in hexadecimal) for this control unit from the system programmer at the host system site. Use Figure 3-8 to convert this address to the decimal control unit number.

Notes:

1. Because it is standard practice to send the address twice, the system programmer may give you a "double address," for example, 4040. You would use only the first two digits, that is, 40.

2. If your 3274 has an integrated modem feature (#5640, 5740, 5840, or 5842) installed, see Appendix G for proper setting of the Modem Address switches.

302 SDLC Control Unit Address (SDLC Only)

Enter the 2-character hexadecimal SDLC control unit address; this information can be obtained from the system programmer at the host system location. The host system, if using NCP, specifies this address in the 3704/3705 PU macro. For loop operation, this address must match the loop adapter station address.

Note: If your 3274 has an integrated modem feature (#5640, 5740, 5840, or 5842) installed, see Appendix G for proper setting of the Modem Address switches.

BSC Hexadecimal Polling Address		Control Unit Number (Sequence Number 301 Response)
EBCDIC	ASCII	
40	20	00
C1	41	01
C2	42	02
C3	43	03
C4	44	04
C5	45	05
C6	46	06
C7	47	07
C8	48	08
C9	49	09
4A	5B	10
4B	2E	11
4C	3C	12
4D	28	13
4E	2B	14
4F	21	15
50	26	16
D1	4A	17
D2	4B	18
D3	4C	19
D4	4D	20
D5	4E	21
D6	4F	22
D7	50	23
D8	51	24
D9	52	25
5A	5D	26
5B	24	27
5C	2A	28
5D	29	29
5E	3B	30
5F	5E	31

Example: If the EBCDIC hexadecimal BSC polling address is 4E, the value to be entered is 14. If the ASCII hexadecimal BSC polling address is 4E, the value to be entered is 21.

Figure 3-8. BSC Polling Address/Control Unit Number Conversion Chart

305 BSC Printer Polling (BSC Only)

Reply 0 if the host uses general polling. Reply 1 if the host uses specific polling and printers are not defined in the host polling list.

310 Modem Connection

Enter a 0 if the 3274 is:

- Operating on a nonswitched line.

- Operating on a switched line in the U.S. or in Canada.

- Operating in Data Terminal Ready/Data Set Ready (DTR/DSR) mode in countries other than Canada.

- Connected via the CCITT V.35 Interface.

Enter a 1 if the 3274 is connected via the CCITT 108.1 Interface operating in connect-data-set-to-line (CDSTL) mode.

311 Modem Wrap (External Modems Only)

Enter a 0 if the modem is not capable of a DTE-initiated automatic wrap test; enter a 1 if the modem is. [In this case, the DTE is the 3274 Control Unit. The wrap test is initiated by the Test (DTE) control signal option via pin 18 from the 3274 Control Unit.]

If an IBM 3863, 3864, 3865, 3872, 3874, or 3875 modem is used, enter a 1 if the Test (DTE) control signal option was activated at the time of modem installation.

Wrap Feature: Determine whether the modem permits data to be wrapped under control of the 3274 Control Unit or whether the modem has a switch to control the wrap function. If the modem has the wrap capability and wrapping can be controlled from the 3274 Control Unit, it is recommended that this method be used.

If you are unable to determine that your modem has the wrap option activated, enter a 0. However, note that this may require you to recustomize at a later date if you determine later that the modem does have the wrap option activated and you wish to use the wrap capability.

313 NRZI (SDLC Only) or NRZ Encoding

Enter a 0 if nonreturn to zero (NRZ) encoding is used; enter a 1 if nonreturn to zero inverted (NRZI) encoding is used.[4]

313 Internal or External Clocking (BSC Only)

Enter a 0 if feature #6301 is *not* installed; enter a 1 if it is.

Note: For external modems operating at 1200 bps with 3274 feature #6301 (business machine clock) installed, you must enter 1.

314 Multipoint or Point-to-Point Network

Enter a 0 if the 3274 is part of a multipoint network; enter a 1 if it is part of a point-to-point network.[4]

Note: If the 3274 is attached to an IBM 3865 Modem Model 2, or if the 3274 has integrated modem feature #5842 installed, you *must* enter a 0.

317 Switched Network Backup (SNBU)

2-Wire:

If your modem does not have SNBU capability, if you do not wish to use SNBU, or if you are using the CCITT V.35 Interface feature (#1550), enter a 0 in response to this sequence number.

---

[4]   This parameter must be compatible with the host system communication controller and/or the modem.

If your modem has SNBU capability and you wish to use this capability, you should customize a second diskette, using the modification procedure in Chapter 5. When customizing the second diskette, enter 1 in response to this sequence number[5] if your modem is a 3872, 3874, 3875, or a 1200-bps integrated modem; enter a 0 in all other cases.

4-Wire:

If the 3274 is attached to an IBM 3863, 3864, or 3865 Modem with the 4-wire SNBU feature, enter a 0.

Note: A switched network attachment to some OEM equipment requires the use of a protective device. This might have to be ordered from an OEM communication equipment supplier and installed separately.

318 *Normal or Half-Speed Transmission*

Enter a 0 if the modem does not have half-speed transmission capability, if full-speed transmission capability is desired, or if you are using the CCITT V.35 Interface feature (#1550). Enter a 1 if half-speed transmission operation is desired.

If the modem has half-speed transmission capability, determine whether this capability can be controlled externally by the 3274 or by a switch on the modem. If the capability can be controlled by a switch on the modem, it is recommended that a 0 be entered and that the switch be used.[5]

Note: To have the capability to operate in either full-speed or half-speed mode, two system diskettes may be generated (as described in Chapter 6), one for full-speed operation and one for half-speed operation. To switch modes, select the other system diskette and perform IML procedures. Ensure that diskettes are appropriately labeled.

321 *EBCDIC or ASCII Character Set*

Enter a 0 if the EBCDIC character set is used; enter a 1 if the ASCII character set is used (available in the U.S. only).

331 *BSC or SDLC Protocol*

Enter a 0 if the BSC protocol is used; enter a 1 if the SDLC protocol is used. (This parameter must be compatible with the host system communication controller.)

342 *Request-to-Send (RTS) Control (2-Wire or 4-Wire)*

SDLC:

2-wire: Enter a 0.
4-wire: Enter a 1.

Notes:

1. If you are using the CCITT V.35 Interface feature (#1550), enter a 1.

---

[5] This parameter must be compatible with the host system communication controller and/or the modem.

2. Entering a 1 here and also in response to sequence number 314 will provide a permanent RTS.

3. If you enter a 0 in response to this sequence number, you must also enter a 0 in response to sequence number 314.

BSC:

2-wire: Enter a 0.

4-wire: If your host modems use the NEW SYNC feature, enter a 0. If you desire RTS from selection to end of transmission (EOT), enter a 1. (Be aware that entering a 1 may cause communication errors if your host modems use the NEW SYNC feature. If in doubt, enter a 0.)

Notes:

1. If you are using the CCITT V.35 Interface feature (#1550), enter a 1.

2. If you enter a 0 in response to this sequence number, you must also enter a 0 in response to sequence number 314.

343 *Communication Interface Options*

Choose the communication interface you are using from the Interface and Feature Number columns, and enter the corresponding Response to this sequence number.

Interface	Feature Number	Response
CCITT V.35 Interface	1550	0
External Modem Interface (Nonswitched)	3701	0
Digital Data Service (DDS) Adapter	5650, 5651	1
X.21 Nonswitched	5655	2
X.21 Switched	5656[1]	3
External Modem Interface (Switched)	3701[2]	4
1200-bps Integrated Modem (Nonswitched)	5500[2]	5
1200-bps Integrated Modem (Switched) with Auto Answer	5501[2]	6
1200-bps Integrated Modem (Switched) with Manual Answer	5502[2]	7
1200-bps Integrated Modem with SNBU and Manual Answer	5507[2]	8
1200-bps Integrated Modem with SNBU and Auto Answer	5508[2]	9
Loop attachment	4850[1]	A
Integrated modem with speeds greater than 1200 bps	5640, 5740,[2] 5840, 5842	B

---

[1]Applies to Configuration Support C only.

[2]Applies to Configuration Support C and T only.

345 Answer Tone (Configuration Support C and T Only; World Trade External Switched Network Modems Only)

Enter a 0 if your external switched network modem requires the 3274 transmit answer tone; otherwise, enter a 1.

347 High-Speed Data Rate (Configuration Support C Only; Loop Attachment Only; Model 51C Only)

Enter a 0 if your loop attachment data rate is less than 38.4 kb. Enter a 1 if it is 38.4 kb. This answer is dependent on the Loop Speed selected. (See Appendix H for additional information.) If you respond 1 to this sequence number, you must respond 1 to sequence numbers 331 and 351.

351 HPCA (SDLC Only) or CCA Adapter

Enter a 0 if the CCA Adapter feature (#6301 or 6302) is installed; enter a 1 if the HPCA Adapter feature (#6303) is installed.

352 Encrypt/Decrypt (SDLC Only) (Configuration Support A, B, and C Only)

Enter a 0 if the Encrypt/Decrypt feature (#3680) is not installed; enter a 1 if it is.

360 X.21 Switched Retry (Configuration Support C; Models 21C, 31C, and 51C Only) (SDLC Only)

Enter 00 if you are not using the X.21 Switched feature. If you are using this feature, enter the number of times that an incoming or outgoing call will be retried after the initial attempt is unsuccessful. Enter 00 if retry will not be used.

Note: A 2-digit number must be entered. If necessary, use a leading zero; for example, to specify 3, enter 03.

361 X.21 Switched Retry Timing (Configuration Support C; Models 21C, 31C, and 51C Only) (SDLC Only)

Enter 00 if you are not using the X.21 Switched feature. If you are using this feature, enter the number of seconds between the retries specified in sequence number 360. This can be from 01 to 20 seconds. Enter 00 if retry will not be used.

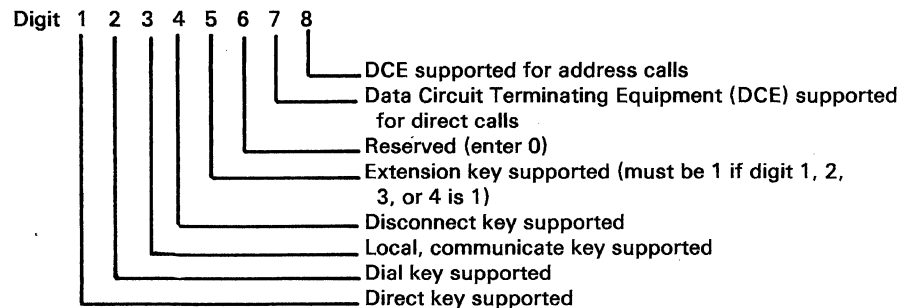Note: A 2-digit number must be entered. If necessary, use a leading zero; for example, to specify 3, enter 03.

362 X.21 Switched Options (Configuration Support C; Models 21C, 31C, and 51C Only) (SDLC Only)

Enter 00000000 if you are not using the X.21 Switched feature. If you are using this feature, the response to this sequence number defines what X.21 options can be used on the terminals attached to all Category A ports except port A0. The conditions for port A0 are described following the diagram below. Each of the 8 digits in this response must be specified either as 1, meaning "yes," or 0, meaning "no." Each digit allows or disallows one of the following:

```
Digit 1 2 3 4 5 6 7 8
                    └──── DCE supported for address calls
                  └────── Data Circuit Terminating Equipment (DCE) supported
                            for direct calls
                └──────── Reserved (enter 0)
              └────────── Extension key supported (must be 1 if digit 1, 2,
                            3, or 4 is 1)
            └──────────── Disconnect key supported
          └────────────── Local, communicate key supported
        └──────────────── Dial key supported
      └────────────────── Direct key supported
```

Note: If the X.21 Switched feature is being used, either digit 7 or digit 8 must be specified as 1, depending on which DCE support is used.

Port A0 access to the X.21 options is determined as follows: With the exception of the Direct and Dial keys (digits 1 and 2), port A0 always has access to all the X.21 options. Access to Direct and to Dial is dependent on the status of the DCE for direct calls (digit 7) and address calls (digit 8). If direct calls are supported (digit 7 specified as 1), the Direct key is supported on port A0. If address calls are supported (digit 8 specified as 1), the Dial key is supported on port A0. If both digits 7 and 8 are specified as 1, both the Direct and Dial keys are supported on port A0.

Example: 00011001 indicates that the Disconnect key (digit 4 specified as 1) and the Extension key (digit 5 specified as 1) can be used on all Category A terminals attached to the 3274. All Category A terminals support the DCE for address calls (digit 8 specified as 1). Since the Extension key allows access to all other X.21 keys, it must be specified if the other keys are to be used. Regardless of the response to this sequence number, the terminal attached to port A0 always has access to all the X.21 options.

900 Entry Acceptance

Sequence number 900, which appears as part of the sequence number 999 display, prompts the operator to enter a 1 if, after the entries are verified, all the responses are entered correctly. If the 3274 detects incorrect responses, it automatically changes the 1 back to a 0, an operator code is displayed for the incorrect information, and incorrect entries are intensified.

901   Printer Authorization Matrix Acceptance

Sequence number 901, which appears as part of sequence number 022 (printer authorization matrix display), prompts the operator to enter a 1 if, after the entries are verified, all the responses are entered correctly. If the 3274 detects unacceptable responses, it automatically changes the 1 back to a 0 and invalid entries are intensified.

999   Modify Procedure

Sequence number 999 displays all the responses entered during the customizing operation, permitting the operator to review the entries and to make any corrections needed. The Initial Customizing Procedure Form instructs the operator how to reply to this sequence number.

Chapter 4. Initial Customizing Procedure

This chapter contains a recommended Initial Customizing Procedure Form. This form should be used the first time the 3274 Control Unit is customized. Once the 3274 is successfully customized, if changes are required or desired, the Modification Procedure Form might be useful. See Chapter 5 for specifics.

When initial customizing is completed, the information on the Initial Customizing Procedure Form should be copied onto the *IBM 3274 Configuration Data Card,* GA23-0046, supplied with the 3274. The card should be stored, for future reference, in the diskette storage area of the 3274.

The planner should enter the following information on the Initial Customizing Procedure Form:

1. The type of keyboard (typewriter or data entry) to be used by the operator.

    Note: If using a 76- or 88-key Japanese English or Japanese Katakana keyboard, specify the number of keys and keyboard type.

2. In step 1, the identification of each diskette to be used.

3. In step 7, the response to sequence number 031 (number of RPQ diskettes to be used). If you have no RPQ diskettes, the response is 0. If your response to sequence number 031 is not 0, you may have to enter a response to sequence number 032. See "032 (Request RPQ Parameter List)" in Chapter 3.

4. In step 8, the responses to be entered by the operator, using as a guide the section in Chapter 3 that applies to the model being customized. Fill in the boxes that apply to your configuration support.

In addition to the form, this chapter also contains:

*   Keyboard diagrams showing the valid key positions for customizing (Figures 4-1 and 4-2).

*   A diagram showing how to insert a diskette properly into the 3274 Control Unit (Figure 4-3).

*   A chart giving the meanings of, and recommended actions for, the operator codes that may appear on the 3178 or 3278 Display Station or 3279 Color Display Station during the customizing procedure (Figure 4-4).

*   Charts giving the meanings of, and recommended actions for, the 8 4 2 1 indicator codes that appear on the 3274 control panel during the customizing procedure (Figures 4-5 and 4-6).

*   A chart giving the meanings of, and recommended actions for, the 8 4 2 1 indicator codes that could appear on the 3274 control panel during IML because of improper customizing (Figure 4-7).

- A Printer Authorization Matrix Form to be used with sequence number 022 in Chapter 3.

All the information listed herein and the completed Initial Customizing Procedure Form should be given to the operator who is to perform the customizing procedure at the 3178, 3278, or 3279 display station.
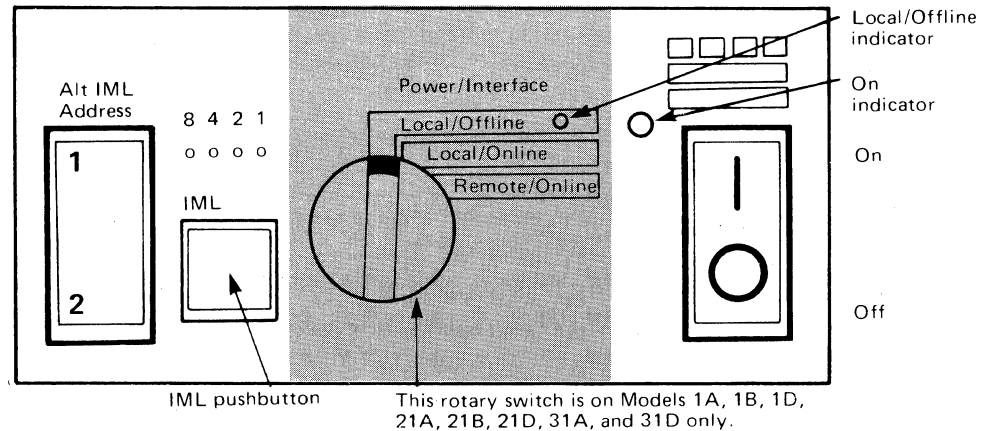
Initial Customizing Procedure Form

Review this entire form before starting the customizing procedure. Unit operating procedures are described in the *IBM 3178 Display Station Operator's Reference Guide,* GA18-2128, the *IBM 3278 Display Station Operator's Guide,* GA27-2890, and in the *IBM 3279 Color Display Station Operator's Guide,* GA33-3057.

This procedure configures the 3274 Control Unit. *If you do not get the expected result in any step, start over at step 1. If you still do not get the expected result, report the problem.*

There are four indicators, labeled 8 4 2 1, on the 3274 control panel. The meanings of the 8 4 2 1 indicator codes are shown in Figures 4-5 and 4-6. If an error occurs during this procedure, the 8 4 2 1 indicator code may help you locate the cause. Within this form, an on indicator is called a 1, an off indicator a 0 (zero). Example: 8 4 2 1
* * o * = 1 1 0 1

3274 Control Panel

IML pushbutton   This rotary switch is on Models 1A, 1B, 1D, 21A, 21B, 21D, 31A, and 31D only.

Type of 3178, 3278, or 3279 keyboard to be used: _____

Note: *See Figure 4-1 or 4-2 before continuing.*

1. Obtain the:

      Feature diskette   _____ ⎫ These diskettes
      System diskette   _____ ⎪ were delivered
      Language diskette (If applicable)   _____ ⎬ with the 3274.
      Load diskette (if applicable)   _____ ⎪
      RPQ diskette(s) (if applicable)   1._____ ⎭
                                         2._____
                                         3._____

2. Ensure that the 3274 Control Unit and the 3178, 3278 Display Station, or 3279 Color Display Station have power switched on. The 3178, 3278, or 3279 must have a keyboard and must be attached to port A0 of the 3274.

   Note: *When customizing a 3274 Model 1A, 1B, 1D, 21A, 21B, 21D, 31A, or 31D, do not set the on/off switch to the off position unless the rotary switch on the control panel is in the Local/Offline position and the Local/Offline indicator is on. The Power/Interface switch must be in the Local/Offline position and the Local/Offline indicator must be on.*

3. Insert the *feature* diskette (Figure 4-3), and press the IML pushbutton momentarily. Within 1 minute, the 8 4 2 1 indicator code should be 0001. If you are using a 3279 Color Display Station, refer to Appendix E for the convergence procedure.

4. Look for a 3-digit sequence number in the upper-left corner of the 3278 or 3279 screen. The first one is 001. Beneath the sequence number are Xs that you replace by keying in the response to sequence number 001 (below). If the response you enter is acceptable, a new sequence number will be displayed. If the response is unacceptable, a 2-digit operator code will be displayed in the upper, center portion of the screen. See Figure 4-4 for the meaning of this code.
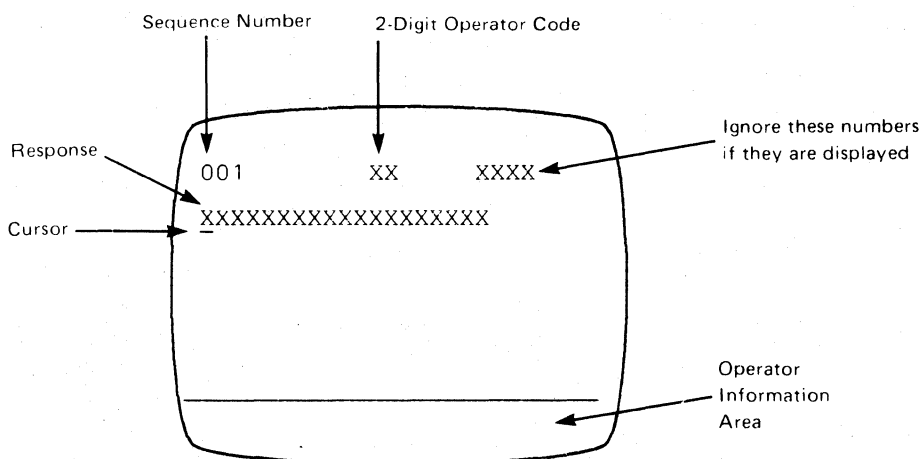
Note: *If a 76- or 88-key Japanese English or Japanese Katakana keyboard is used, press the key circled in Figure 4-2 before proceeding. The keyboard will be locked for about 10 seconds. When the keyboard unlocks, continue.*

- Key in the following characters in response to sequence number 001:

      1234567890ABCDEF

- Press the spacebar once.

- Key in the 2-digit validation number that is printed on the *system* diskette label.

- Press ENTER.

Note: *Use only the cursor move keys or tab key to reposition the cursor.*

5. Key in a 0 (zero) in response to sequence number 011. Press ENTER.

6. If you have *not* been given a Printer Authorization Matrix Form, key in a 0 in response to sequence number 021 and press ENTER. If you have been given the Printer Authorization Matrix Form, key in a 1 and press ENTER; then follow the instructions on the form.

7. Key in the number of RPQ diskettes_____ being used in response to
   (0–3)
   sequence number 031. Press ENTER.

Note: *If you respond to sequence number 031 with a 1, 2, or 3, sequence number 032 may be displayed. If you have been given specific RPQ para- meter instructions, follow those instructions. If not, key in a 0 in response to 032 and press ENTER.*

8. Look for new sequence numbers. They may not be in numeric order; nor will all be displayed. Enter the responses indicated for each sequence number from the following filled-in listing. (Note that the listing is shown left-to-right, top-to-bottom, to match a display to be shown later in step 9.) Press ENTER after keying in each response. If an error occurs after you enter a response, a 2-digit operator code will be displayed in the top center of the display screen. Figure 4-4 may help you to find the cause of the error.

Configuration Support A and B (Read left to right.)

Note: *Use leading zeros to have 1-digit response fill a 2-digit box.*

111 – ☐☐	112 – ☐☐	113 – ☐☐☐☐	
121 – ☐☐	131 – ☐	132 – ☐	133 – ☐
134 – ☐	135 – ☐		
141 – ☐	143 – ☐	145 – ☐	147 – ☐
151 – ☐			161 – ☐
201 – ☐☐	211 – ☐	213 – ☐	215 – ☐☐☐☐☐
301 – ☐☐	302 – ☐☐	305 – ☐	310 – ☐
311 – ☐	313 – ☐	314 – ☐	317 – ☐
318 – ☐	321 – ☐	331 – ☐	342 – ☐
343 – ☐	351 – ☐	352 – ☐	900 – 0

Configuration Support C (Read left to right.)

Note: *Use leading zeros to have 1-digit response fill a 2-digit box.*

111 – ☐☐	112 – ☐☐	113 – ☐☐☐☐	114 – ☐	121 – ☐☐	
131 – ☐	132 – ☐	133 – ☐	134 – ☐	135 – ☐	
141 – ☐	143 – ☐	145 – ☐	147 – ☐		
151 – ☐					
161 – ☐	162 – ☐	163 – ☐☐	164 – ☐	165 – ☐	166 – ☐
201 – ☐☐	211 – ☐	213 – ☐	215 – ☐☐☐☐☐		
301 – ☐☐	302 – ☐☐	305 – ☐	310 – ☐	311 – ☐	313 – ☐
314 – ☐	317 – ☐	318 – ☐	321 – ☐	331 – ☐	342 – ☐
343 – ☐	345 – ☐	347 – ☐	351 – ☐	352 – ☐	
360 – ☐☐	361 – ☐☐	362 – ☐☐☐☐☐☐☐☐		900 – 0	

Configuration Support T (Read left to right.)

Note: *Use leading zeros to have 1-digit response fill a 2-digit box.*

112 – ☐☐   113 – ☐☐☐☐   121 – ☐☐
131 – ☐   132 – ☐   133 – ☐   134 – ☐   135 – ☐   139 – ☐
141 – ☐   143 – ☐   145 – ☐   147 – ☐
151 – ☐   161 – ☐
170 – ☐   171 – ☐☐ ☐☐ ☐☐ ☐☐ ☐☐   173 – ☐☐☐☐☐☐☐
175 – ☐☐☐☐☐   176 – ☐
201 – ☐☐   211 –   213 – ☐   215 – ☐☐☐☐☐
301 – ☐☐   302 –   305 – ☐   310 – ☐   311 – ☐   313 – ☐
314 – ☐   317 –   318 – ☐   321 – ☐   331 – ☐   342 – ☐
343 – ☐   345 –   351 – ☐

900 – 0

9. After the last response is entered, sequence number 999 is displayed with the responses entered during step 8. Verify the entries with the listing in step 8. You may correct entries by moving the cursor to the entry to be changed and entering the correct response. Do not try to change the sequence number itself.

10. When all the entries are correct, move the cursor to the zero after sequence number 900, change it to a 1, and press ENTER. If all the entries are acceptable, the screen will be cleared. Go to step 11. If any entry is unacceptable, the entry to sequence number 900 is changed back to 0 (zero) and the unacceptable response is intensified. (With the 3279, intensified characters are white and red instead of blue and green.) The 2-digit operator code in the upper, center portion of the screen refers to the greatest sequence number with its response intensified. (Figure 4-4 gives the meaning of these codes.) Repeat step 9 and this step. If there are still unacceptable entries, report the problem.

11. Within 2 minutes, the 8 4 2 1 indicator code on the 3274 Control Unit should be flashing one of the following:

1100 — Replace the feature diskette with the *RPQ* diskette. *Do not press the IML pushbutton.* (If you do press the IML push-button, go back to step 3.) After the RPQ diskette is inserted, the code will change to 0111 within 30 seconds. If additional RPQ diskettes are required, the indicator code will again flash 1100. Repeat the procedure for each additional RPQ diskette. *At no time should you press the IML pushbutton.* When the RPQ diskette procedure is completed, the indicator code should be flashing 1110. Reinsert the *feature* diskette. *Do not press the IML pushbutton.* Within 2 minutes, the 8 4 2 1 indicator code will flash 1011 or 1101.

1101 — Replace the feature diskette with the *language* diskette. *Do not press the IML pushbutton.* (If you do press the IML push-button, go back to step 3.) Within 30 seconds, the indicator code will change to 0111 and then to flashing 1011 within 1 minute. When the indicator code is flashing 1011, replace the language diskette with the *system* diskette. *Do not press the IML pushbutton.* Within 15 minutes, the 8 4 2 1 indicator code will change to one of the following:

Note: If errors occur during this 15-minute period, a flashing 8 4 2 1 indicator code will appear. Figures 5-5 and 5-6 may aid in locating the cause.

0011 — Replace the system diskette with the *load* diskette. *Do not press the IML pushbutton.* (If you do press the IML pushbutton, go back to step 3.) Within 5 minutes the 8 4 2 1 indicator code will change to 1111 (all lights are on) indicating that customizing is successfully completed.

1111— Customizing is successfully completed go to step 12.

1011 —Replace the feature diskette with the *system* diskette. *Do not press the IML pushbutton.* (If you do press the IML push-button, go back to step 3.) Within 15 minutes, the 8 4 2 1 indicator code will change to one of the following:

Note: If errors occur during this 15-minute period, a flashing 8 4 2 1 indicator code will appear. Figures 4-5 and 4-6 may aid in locating the cause.

0011 — Replace the system diskette with the *load* diskette. *Do not press the IML pushbutton.* (If you do press the IML pushbutton, go back to step 3.) Within 5 minutes the 8 4 2 1 indicator code will change to 1111 (all lights are on) indicating that customizing is successfully completed.

1111 —Customizing is successfully completed. Go to step 12.

12. Be sure that the 3274 is attached to the appropriate communication facility.

Note: If you used a load diskette in this procedure, that load diskette should be used for step 13. Otherwise, the system diskette should be used.

13. Press the *IML* pushbutton. During the IML operation, errors may occur because of improper customizing. The 8 4 2 1 indicator codes caused by these errors are shown in Figure 4-7.

If, after the IML operation is initiated, the ✗ ☼ symbol appears with no communication reminders in the 3178, 3278, or 3279 display station's operator information area for more than 1 minute, contact your host system operator to ensure that the 3274 Control Unit is being polled.

14. It is suggested that you copy the configuration information from this form on the *IBM 3274 Configuration Data Card,* GA23-0046, supplied with the 3274 Control Unit. Store the card, for future reference, in the pocket on the inside of the 3274 operator access door on Models 1, 21, and 31, or in the diskette storage area on the front of the Model 51C.

15. If a Subsystem Verification Procedure has been given to you, perform that procedure.

16. If you have been given instructions for setting 3274 Model 31C or 51C switches, follow these instructions.

Note: *During customizing, only certain key positions are valid. Only those key positions shown below are to be used.*

Typewriter
Keyboard

Data Entry
Keypunch
Keyboard

When ENTER is specified, press the New Line key.
When RESET is required, press the PF 10 key.

When New Line
is required, press
the PF8 key.

Data Entry
Keyboard
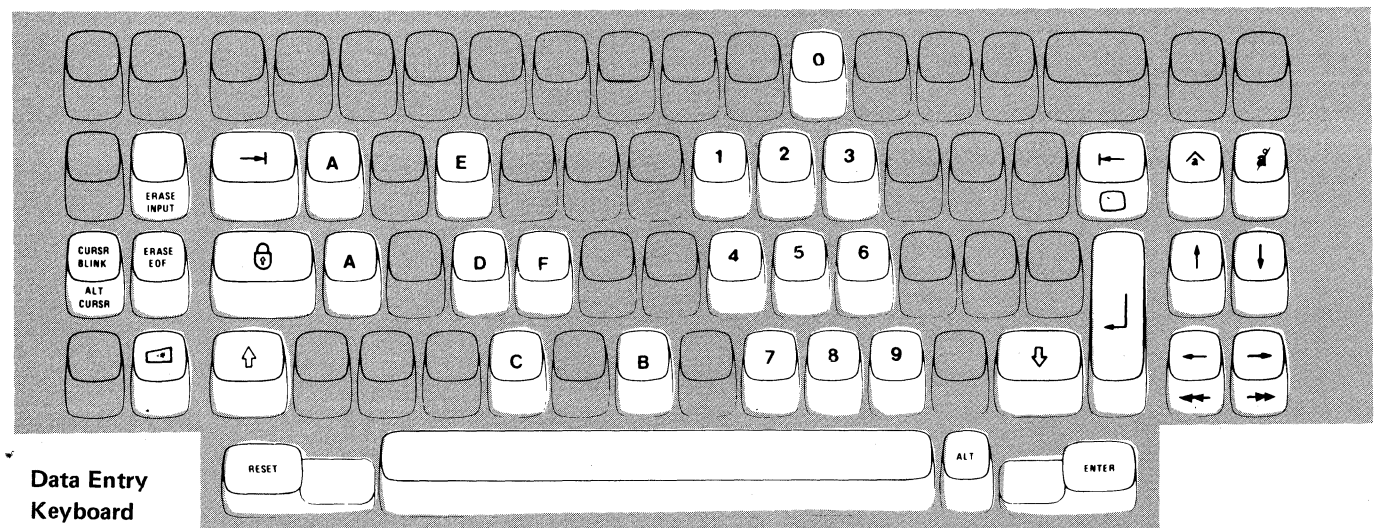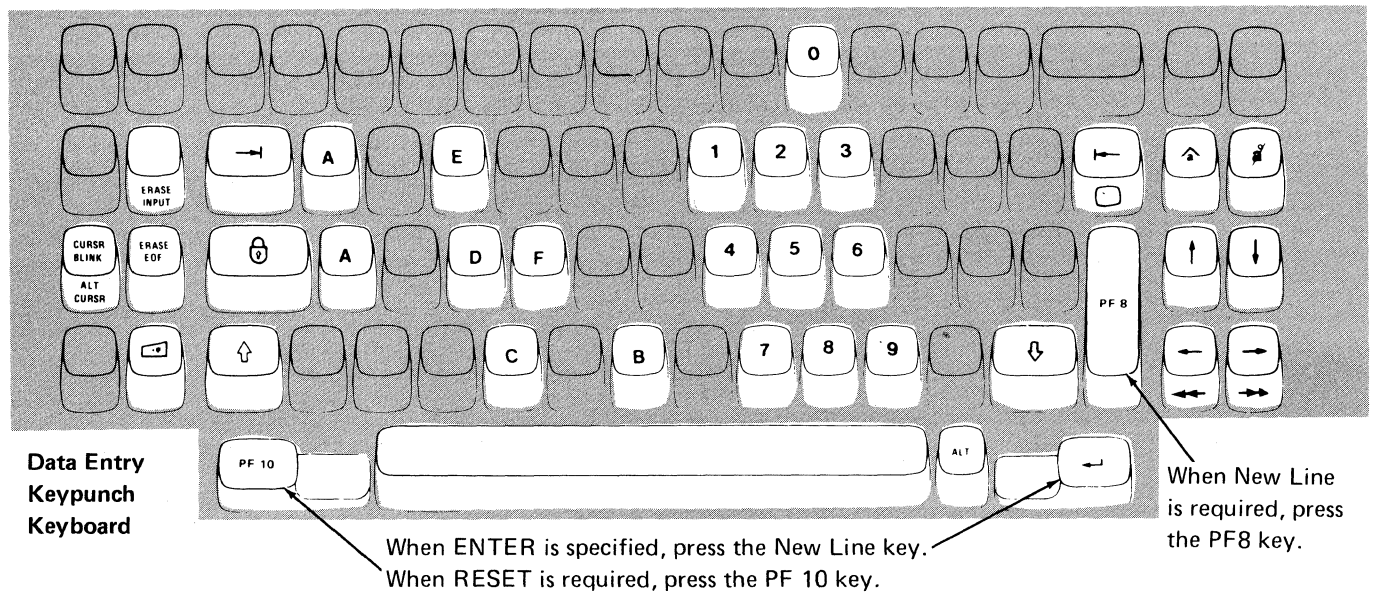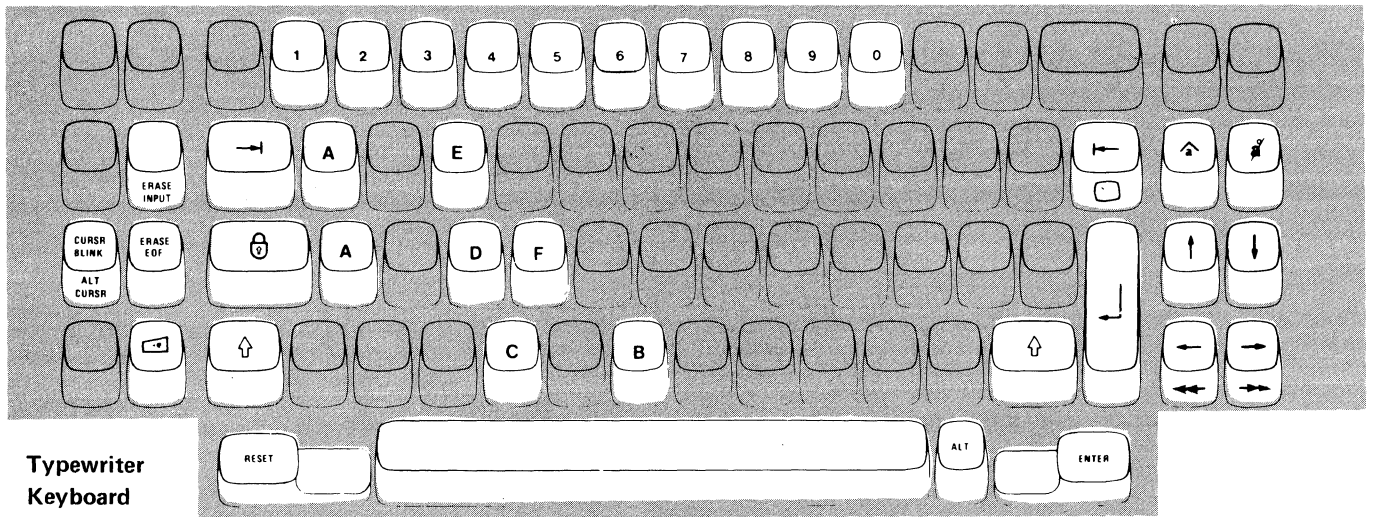
Figure 4-1. Valid Key Positions during Customizing

Note: *These drawings show the valid keys for both the 76- and 88-key keyboards. The PF keys located on the right side of the 88-key keyboards are not shown and are not valid during this procedure.*
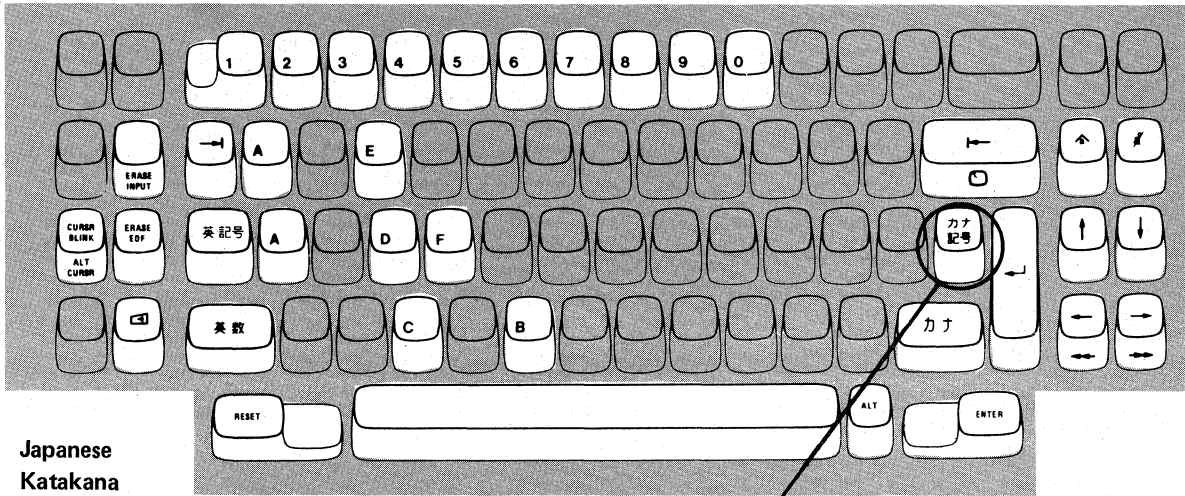
Japanese Katakana Typewriter Keyboard

Press this key when sequence number 001 appears in upper left corner of 3278 screen.
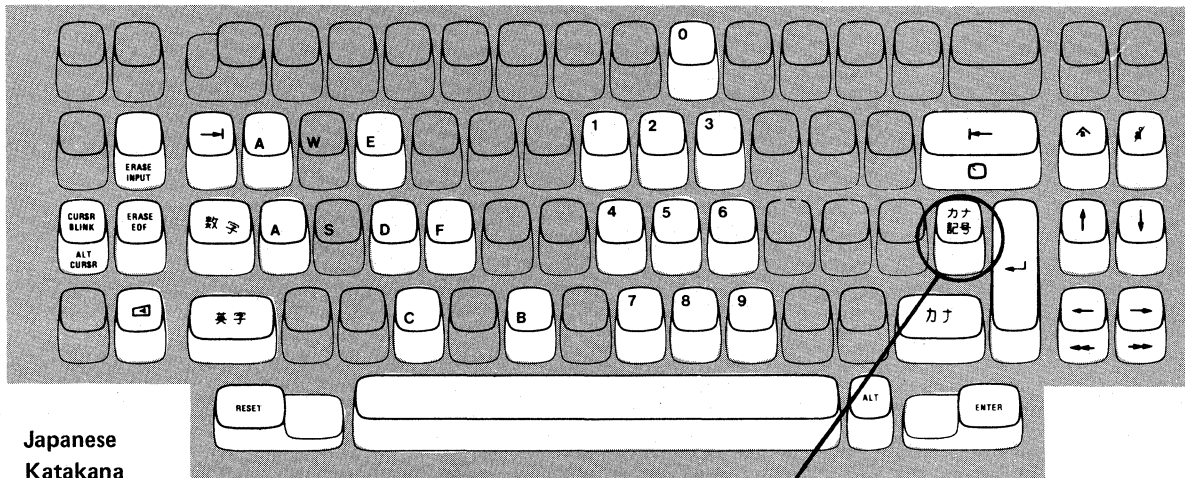
Japanese Katakana Data Entry Keyboard

Press this key when sequence number 001 appears in upper left corner of 3278 screen.
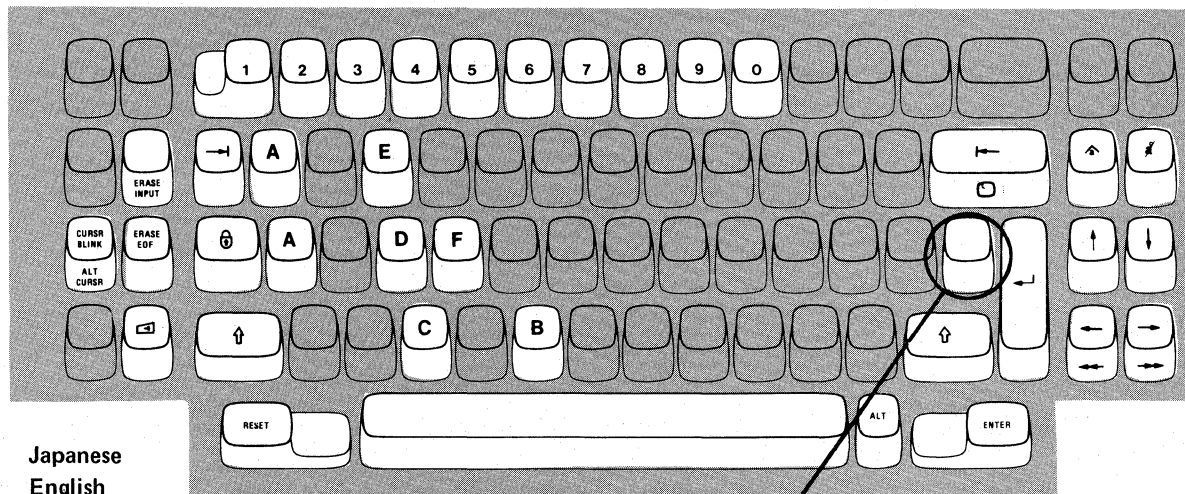
Japanese English Typewriter Keyboard

Press this key when sequence number 001 appears in upper left corner of 3270 screen.

Figure 4-2. Valid Key Positions during Customizing When Japanese Katakana and Japanese English Keyboards Are Used

4-10

3274 Diskette Insertion Procedure (All Models except 51C)

1. Open the customer access door, and locate the diskette reader enclosure.

Diskette Storage

Diskette Reader Enclosure

Customer Access Door

2. Open the diskette reader enclosure door by pressing the latch to the right.
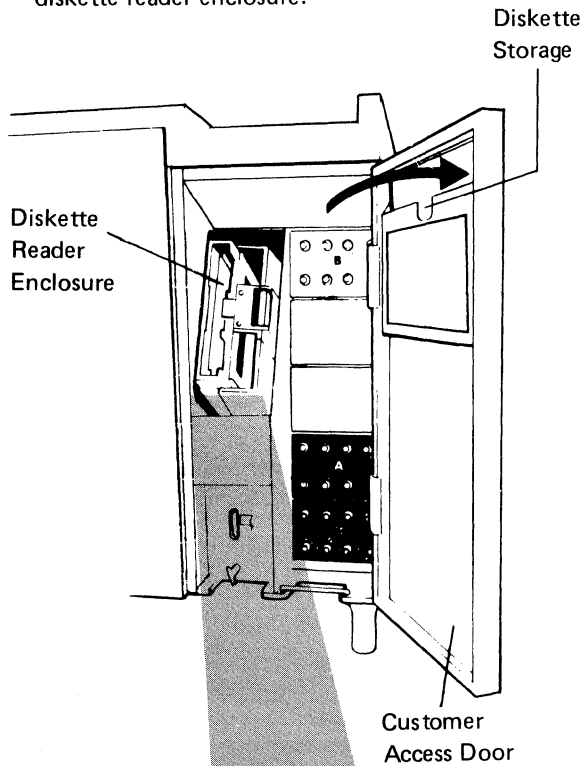
Diskette Reader Enclosure Door Latch

3. Remove the diskette to be used with the 3274 from its gray protective envelope, and insert it squarely into the enclosure. Note that the diskette label position is to the right.

Diskette Label
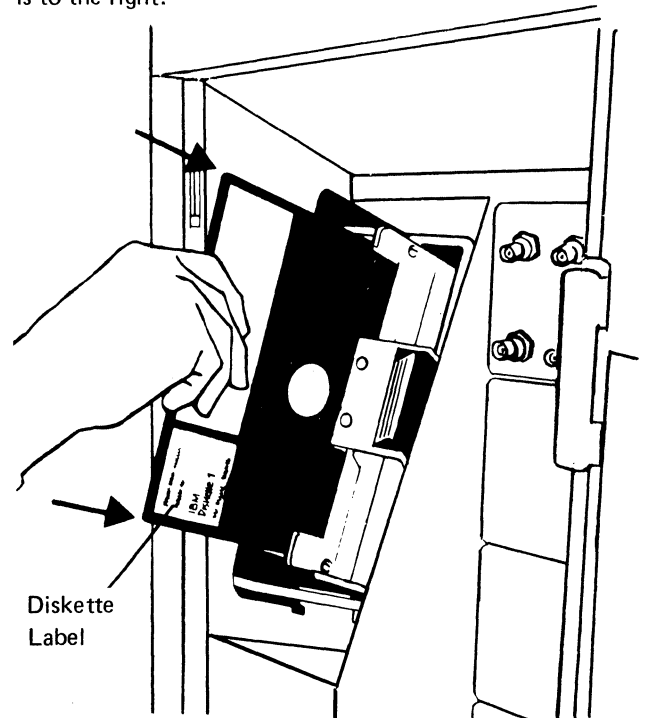
4. Close the diskette reader enclosure door by pushing the door to the left until it latches (clicks).
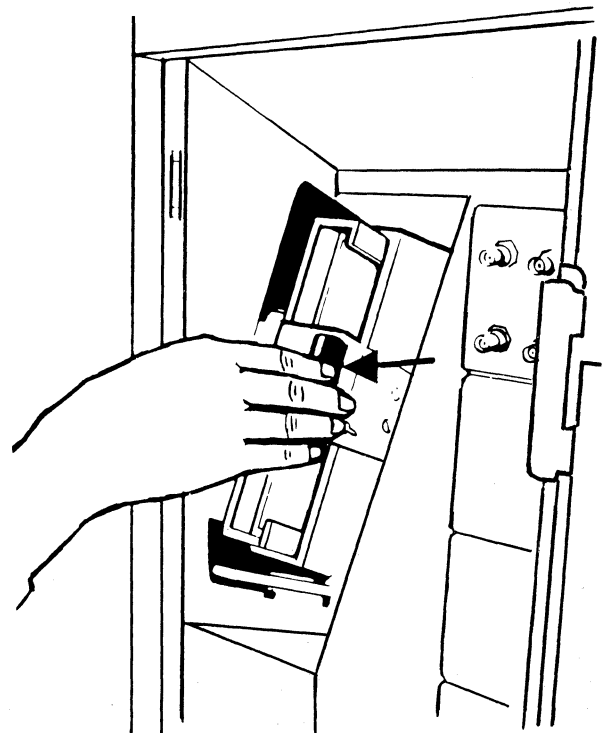
Figure 4-3 (Part 1 of 2). Inserting a Diskette into the 3274 Control Unit (during Customizing)

3274 Diskette Insertion Procedure (Model 51C)

1. Open the diskette reader by turning the lever counterclockwise to the vertical position.
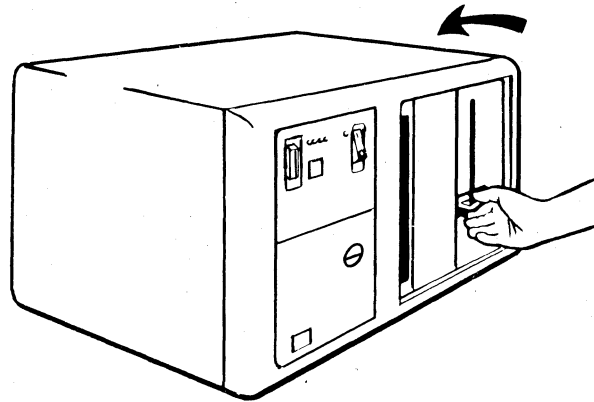
2. Remove the diskette to be used with the 3274 from its gray protective envelope, and insert it squarely into the enclosure. Note that the diskette label position is on your left.
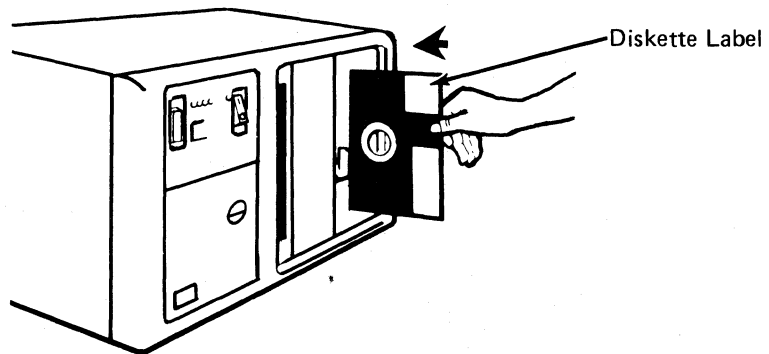
3. Close the diskette reader by turning the lever to the horizontal position.
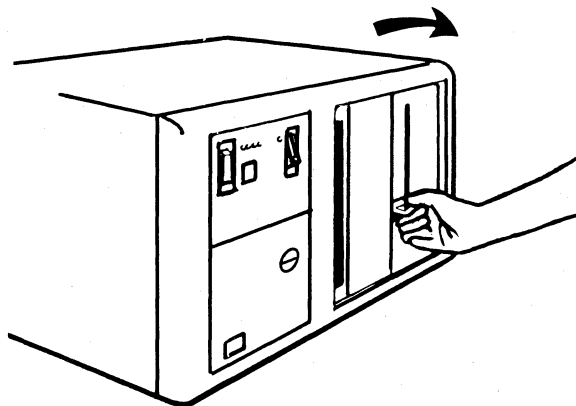
Figure 4-3 (Part 2 of 2). Inserting a Diskette into the 3274 Control Unit (during Customizing)

Code	Meaning	Action
01	One or more of the first 10 characters are incorrect.	Enter the correct response.
02	One or more of the 11th to 17th characters, including the space, are incorrect.	Enter the correct response.
03	1. One of the last two characters you entered in response to sequence number 001 is incorrect, or, 2. The diskette release level is not the same as the documentation level.	1. Enter the correct response. 2. Restart after matching diskette and documentation levels.
11[1]	You entered an invalid response (too many characters, value too high or too low, wrong character, etc.).	Enter the correct response.
12[1]	You entered a character other than A, B, C, D, E, 1, 2, 3, or 4 in response to sequence number 151 (3274 Model Designation).	Enter the correct response.
13[1]	Your response has too few characters.	Enter the correct response.
14[1]	1. The numeric total of the responses you entered for sequence numbers 111 (Number of Category B Terminals) and 112 (Number of Category A Terminals) is greater than 32 (Models 1, 21, and 31) or 12 (Model 51C). 2. Your response to sequence number 163 (Extended Character Set Adapter) is greater than your response to sequence number 112 (Number of Category A Terminals).	1. Enter the correct responses. 2. Change your response to sequence number 163 to the same value as, or a value less than, your response to sequence number 112.
21[1]	You made an unacceptable change during the modify sequence (number 999).	Recheck the entries, and correct them.
22[1]	You specified something in your configuration that is not compatible with the character set you specified in sequence number 321. If you specified the EBCDIC character set (321=0), sequence number 121 must not be "02." If you specified the ASCII character set (321=1): Sequence number 121 must be "02" Sequence number 131 must be "1" Sequence numbers 132, 133, 134, and 135 must be "0" Sequence numbers 162, 163, 164, and 165 must be "0" Sequence number 166 must be "A"	Verify and enter the correct response(s).
23[1]	One or more of your responses are not compatible with the response to sequence number 331 (BSC or SDLC Protocol).	Verify and enter the correct responses.
24[1]	1. All your responses to sequence numbers 131 through 135 (keyboard types) and 0's (at least one must be 1), or 2. Your response to sequence number 113 (Extended Function Store) was something other than 0000 or A000. Your response indicates that the Extended Function Store feature is installed in your 3274 when, in fact, the feature is not installed.	1. Verify and enter the correct responses. 2. Verify and enter the correct response.
25[1]	1. If this response is to sequence number 133 (Data Entry Keypunch Layout Keyboard), you specified the Katakana language (121=17) and a Data Entry Keypunch Layout Keyboard (133=1). The Data Entry Keypunch Layout Keyboard cannot be specified with the Katakana language. 2. If this response is to sequence number 113 (Entended Function Store), the 3274 has less storage than indicated in your response to sequence number 113. 3. You specified a language other than 01 (U.S. English) to sequence number 121 and Text (135=1). Text cannot be specified with languages other than U.S. English.	1. Verify the enter the correct response. 2. Report the problem. 3. Verify and enter the correct response.
26[1]	You do not have enough storage to support all the features you have selected.	Report the problem and verify that the storage specified in response to sequence number 113 is correct. (The storage requirements for the features you have selected may have to be recalculated using the storage-requirement tables in Appendix I.)
27[1]	1. You specified the Portuguese language (121=18). This is not allowed with your configuration. 2. You specified SFAP (162=1) and a language that is not allowed with SFAP (121=02, 08, 10, 13, 20, 26, or 27). 3. You specified a language that is not allowed with a 3290 Display Terminal (121=02, 06, 08, 09, 10, 13, 20, 26, or 27).	1. Specify Portuguese (Alternate) (127=28). 2. Verify and enter the correct responses. 3. Verify and enter the correct response.

[1] If any entry is unacceptable, the entry for sequence number 900 is changed back to 0 (zero) and the unacceptable value is intensified.

Figure 4-4 (Part 1 of 2). Operator Codes during Customizing Only

Code	Meaning	Action
28[1]	Your responses to sequence numbers 113 (Extended Function Store) and 151 (3274 Model Designation) are incompatible.	Verify and enter the correct response.
29	You specified an Attribute Select keyboard (166=B or C), but your did not specify a Typewriter keyboard (131=1) or an APL keyboard (132=1).	Either change 166 to "A" or change 131 and/or 134 to "1."
30	1. You have specified a starting address for Multiple Interactive Screens (sequence number 171), but you have not specified logical terminal addresses. 2. You have specified logical terminal addresses for Multiple Interactive Screens (sequence number 171), but you have not specified a starting address.	Review instructions for defining Multiple Interactive Screens (Appendix J) and enter the correct response.
31	You have specified an invalid starting address for Multiple Interactive Screens (sequence number 171).	Specify a starting address that is not port A0, but is low enough to allow for your required number of terminals.
32	Your response to either sequence number 112 or 171 is incorrect. You have specified more logical terminals than your system will allow.	Review Appendix B, remembering that if using BSC or a 3274 Model D, you cannot specify more than 32 terminal addresses. If using SDLC or 3274 Model A, you cannot specify more than 128 terminal addresses.
33	Zero has been specified in sequence number 170, but you specified nonzero responses to sequence numbers 171, 173, 175, and 176.	Either specify 1 to sequence number 170, or zeros to sequence numbers 171, 173, 175, and 176.
34	You specified a Category B device in response to sequence number 111, but you specified a 3290 in sequence number 170. Category B devices are not allowed with 3290s.	Verify and enter the correct responses.
36	You have specified a nonzero response for sequence number 139, but a zero response for sequence number 170. 170 must be 1 for 139 to be nonzero.	Verify responses to sequence numbers 139 and 170, then enter the correct response(s).
99	Your entries are acceptable, but the entry for sequence number 900 or 901 has not been changed to a 1.	Change 900 or 901 entry to a 1.

[1] If any entry is unacceptable, the entry for sequence number 900 is changed back to 0 (zero) and the unacceptable value is intensified.

Figure 4-4 (Part 2 of 2). Operator Codes during Customizing Only

Steady Code	Diskette Mounted	Meaning	Action
0001	Feature	Customizing being performed	None.
0010	Any (indication lasts for 3 minutes or more)	Diskette improperly inserted or an internal 3274 error	Insert diskette properly and retry.
0011	Feature	Customizing being performed	None.
0100	Feature	Patch, printer authorization matrix, or RPQ being performed	None.
0101	Feature	Configuration being performed	None.
0110	Feature	Modification being performed	None.
0111	Feature, language, or RPQ	Normal 3274 operation	None.
1000	System (customizing in process)	Normal 3274 operation	None.
1001	Any	Internal 3274 error	Retry. If the error recurs, follow your local procedure for problem recovery.
1010	Any	Internal 3274 error	Retry. If the error recurs, follow your local procedure for problem recovery.
1101	Any (customizing procedure in progress)	1. IML button pressed while diskette is being changed, or 2. A bad or uncustomized system diskette is being used	1. Recustomize. Do not press the IML pushbutton unless instructed to do so. 2. Insert a good customized system diskette.
1111	System or load (IML not performed)	Customizing is completed	IML can be performed.

Figure 4-5. Steady 8 4 2 1 Indicator Codes during Customizing Only

Flashing Code[1]	Diskette Mounted	Meaning	Action
0000 0011	System	Load diskette request	Insert load diskette.
0000 1010	System	A diskette read error occured.	Retry. If the error recurs, follow your local procedure for problem recovery.
0000 1011	Any	System diskette request	Insert system diskette.
0000 1100	Any	RPQ diskette request	Insert RPQ diskette.
0000 1101	Any	Language diskette request	Insert language diskette.
0000 1110	Any	Feature diskette request	Insert feature diskette.
0100 0010	System	Configuration on system diskette being used for update-diskette procedure is not compatible with this 3274	Use a system diskette with a compatible configuration.
1000 0001	System	Uncustomized system diskette being used during update procedure	Use customized system diskette.
1001 0110	Any	Wrong level diskette being used	Use correct level diskette.
1111 0001	Feature	On/Off switch or TEST key pressed instead of ENTER	Retry. If the error recurs, follow your local procedure for problem recovery.
	System	Internal 3274 error	Follow your local procedure for problem recovery.
1111 0010	Feature	3278 Model 2 or higher is not attached to port A0.	Attach 3278 Model 2, its equivalent, or higher to port A0. Retry customizing.
1111 0011	Feature	Internal 3274 error	Follow your local procedure for problem recovery.
1111 0100	System	Internal 3274 error	Retry. If the error recurs, follow your local procedure for problem recovery.
1111 0101	System	Internal 3274 error	Retry. If the error recurs, follow your local procedure for problem recovery.
	Feature	On/Off switch or TEST key on the 3278 pressed instead of ENTER	
1111 0110	RPQ	Incompatible RPQs	Follow your local procedure for problem recovery.
	Feature	Internal 3274 error	
1111 0111	System	Internal 3274 error	Follow your local procedure for problem recovery.
1111 1000	System	Internal 3274 error	Follow your local procedure for problem recovery.
1111 1001	System	Internal 3274 error	Follow your local procedure for problem recovery.
1111 1010	Any	Internal 3274 error	Follow your local procedure for problem recovery.
1111 1011	System	Internal 3274 error	Follow your local procedure for problem recovery.
1111 1100	Any	Diskette drive error or a bad diskette	Retry. If the error recurs, follow your local procedure for problem recovery.
1111 1101	System or feature	Diskette drive error or a bad diskette	Retry. If the error recurs, follow your local procedure for problem recovery.
1111 1110	Any	Internal 3274 error	Retry. If the error recurs, follow your local procedure for problem recovery.

[1] These codes will flash alternately as shown, for example, 0000, 1011, 0000, 1011.

Figure 4-6. Flashing 8 4 2 1 Indicator Codes during Customizing Only

Steady Code	Flashing Code[1]	Diskette Mounted	Meaning	Action
–	0000 0101	System	Internal 3274 error or wrong response to sequence number 113 during customizing procedure	Check response to sequence number 113, and retry. If the error recurs, follow your local procedure for problem recovery.
–	0000 0110	System	Internal 3274 error or wrong response to sequence number 111, 112, 151, or 351 during customizing procedure	Check response to sequence number 111, 112, 151, or 351, and retry. If the error recurs, follow your local procedure for problem recovery.
–	0000 0111	System	1. Internal 3274 error, or 2. Wrong response to sequence number 311 or 343, or 3. The 3274 is not connected to the communication facility	1 and 2. Check responses to sequence numbers 311 and 343, and retry. 3. Connect the 3274 to the communication facility. If the error recurs, follow your local procedure for problem recovery.
–	0000 1000	System	Internal 3274 error or wrong response to sequence number 111 during customizing procedure	Check response to sequence number 111, and retry. If the error recurs, follow your local procedure for problem recovery.
1101	–	System	Uncustomized system diskette	Insert customized system diskette.
1110	–	System	Insufficient storage	Check response to sequence number 113, and retry. If the error recurs, follow your local procedure for problem recovery.

[1] These codes will flash alternately as shown, for example, 0000, 0101, 0000, 0101.

Note: *These indicators may be caused by something other than incorrect customizing. Further aids can be found in the* IBM 3270 Information Display System: 3274 Control Unit Problem Determination Guide, *GA27-2850.*

Figure 4-7. 8 4 2 1 Indicator Codes during IML That May Result from an Incorrect Customizing Procedure

Printer Authorization Matrix Form

In response to sequence number 022, enter the characters (below) supplied by the planner in the appropriate groups on your display screen. If a group already is displayed as AA M XXXX YYYY YYYY, your entry will overwrite these characters. When you have completed all your entries, move the cursor to the zero after sequence number 901 at the bottom of the screen, change it to a 1, and press ENTER. Any entry that is not valid will be intensified at this time and the 1 you entered will change back to a 0 (zero). Correct the invalid entry, and return to 901. Again, change the zero to a 1, and press ENTER. When all entries are valid, the printer authorization matrix display will be replaced by the next customizing sequence number. (If, at any time during this procedure, you wish to cancel any entries you have just made, change the 0 (zero) after the 901 to A and press ENTER.) Return to your original instructions.

To delete an entry, move the cursor (with cursor-move keys or tab key) to the leftmost position of the entry (the Printer Port Address) and press the spacebar twice. The entire matrix, or as many entries as desired, can be deleted in this manner. After all changes have been made, press ENTER. All deleted entries will be displayed as AA M XXXX YYYY YYYY. When the matrix is satisfactorily defined, move the cursor to the zero after sequence number 901, change it to a 1, and press ENTER.

	Printer Port Address		Printer Mode	Printer Class Assignment				Source Device List							
	A	A	M	X	X	X	X	Y	Y	Y	Y	Y	Y	Y	Y
1)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
2)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
3)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
4)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
5)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
6)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
7)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
8)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
9)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
10)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
11)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
12)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
13)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
14)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
15)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
16)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_

	Printer Port Address		Printer Mode	Printer Class Assignment				Source Device List							
	A	A	M	X	X	X	X	Y	Y	Y	Y	Y	Y	Y	Y
17)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
18)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
19)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
20)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
21)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
22)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
23)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
24)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
25)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
26)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
27)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
28)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
29)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
30)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
31)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_

Chapter 5. Modification Procedure

The Modification Procedure Form is used to modify an existing 3274 configuration without performing the entire customizing procedure. The recommended form contained in this chapter should be used only after the 3274 Control Unit has been initially customized per the Initial Customizing Procedure Form in Chapter 4.

Note: Changes to any of the following sequence numbers will cause extensive configuration changes. It is recommended that the initial customizing procedure in Chapter 4 be used to change these sequence numbers and that the proper planning be performed before the changes are made.

151 - Model Designation

162 - Structured Field and Attribute Processing

201 - Control Unit Address[1]

301 - Control Unit Number[1]

302 - SDLC Control Unit Address[1]

331 - BSC or SDLC Protocol

343 - Communication Interface Options

After changes are made, be sure that the changes are recorded on the *IBM 3274 Configuration Data Card,* GA23-0046, stored in the diskette storage area of the 3274.

The planner should enter the following information on the Modification Procedure Form:

1. The type of keyboard (typewriter or data entry) to be used by the operator.

   Note: If using a 76- or 88-key Japanese English or Japanese Katakana keyboard, specify the number of keys and keyboard type.

2. In step 1, the identification of each diskette to be used.

3. In step 7, the response to sequence number 031 (number of RPQ diskettes to be used). If your response to sequence number 031 is not 0, you may have to enter a response to sequence number 032. See "032 (Request RPQ Parameter List)" in Chapter 3.

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[1] The modification procedure should not be used to change a 0 response to sequence number 201, 301, or 302.

In addition to the form, this chapter also contains:

- Keyboard diagrams showing the valid key positions for modification (Figures 5-1 and 5-2).

- A diagram showing how to insert diskettes into the 3274 Control Unit (Figure 5-3).

- A chart giving the meanings of, and recommended actions for, the operator codes that may appear on the 3178 or 3278 Display Station or on the 3279 Color Display Station during the modification procedure (Figure 5-4).

- Charts giving the meanings of, and recommended actions for, the 8 4 2 1 indicator codes that appear on the 3274 control panel during the modification procedure (Figures 5-5 and 5-6).

- A chart giving the meanings of, and recommended actions for, the 8 4 2 1 indicator codes that could appear on the 3274 control panel during IML as a result of improper modification (Figure 5-7).

- A Printer Authorization Matrix Form to be used with sequence number 022 (Printer Authorization Matrix Specification).

All the information listed above and the filled-in Modification Procedure Form should be given to the operator who is to perform the modification procedure at the 3178, 3278, or 3279 display station.

Modification Procedure Form

Review this entire form before starting the procedure. Unit operating procedures are described in the *IBM 3178 Display Station Operator's Reference Guide,* GA18-2128, the *IBM 3278 Display Station Operator's Guide,* GA27-2890, and in the *IBM 3279 Color Display Station Operator's Guide,* GA33-3057.

This procedure modifies an existing 3274 Control Unit configuration. *If you do not get the expected result in any step, start over at step 1. If you still do not get the expected result, report the problem.*

The modification procedure can be negated at any time *before step 11* by inserting the customized system or load diskette and pressing the IML pushbutton. This will return your system to its last customized level.

There are four indicators, labeled 8 4 2 1, on the 3274 control panel. The meanings of the 8 4 2 1 indicator codes are shown in Figures 5-5 and 5-6. If an error occurs during this procedure, the 8 4 2 1 indicator code may help you locate the cause. Within this form, an on indicator is called a 1, an off indicator a 0 (zero). Example: 8 4 2 1

               * * o * = 1101

3274 Control Panel

IML pushbutton

This rotary switch is on Models 1A, 1B, 1D, 21A, 21B, 21D, 31A, and 31D only.
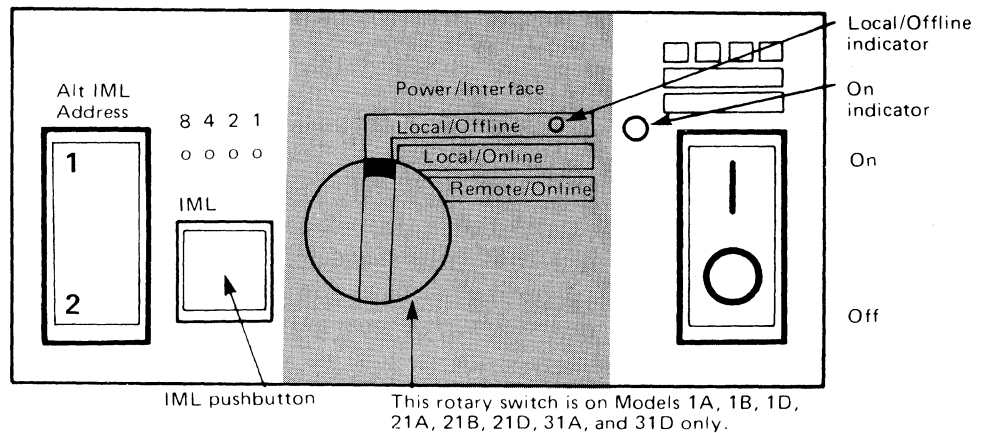
Type of 3178, 3278, or 3279 keyboard to be used: _____

Note: *See Figure 5-1 or 5-2 before continuing.*

1. Obtain the:
   Feature diskette   _____
   Customized system, or customized load, diskette   _____
   Language diskette (if applicable)   _____
   RPQ diskette(s) (if applicable)   1._____
                                       2._____
                                       3._____

2. Ensure that the 3274 Control Unit and the 3178 or 3278 Display Station or 3279 Color Display Station have power switched on. The 3178, 3278, or 3279 must have a keyboard and must be attached to port A0 of the 3274.

   Note: *When customizing a 3274 Model 1A, 1B, 1D, 21A, 21B, 21D, 31A, or 31D, do not set the on/off switch to the off position unless the rotary switch on the control panel is in the Local/Offline position and the Local/Offline indicator is on. The Power/Interface rotary switch must be in the Local/ Offline position and the Local/Offline indicator must be on.*

3. Insert the *feature* diskette (see Figure 5-3) and, holding the Alt IML Address switch in position 1, press and release the IML pushbutton; then release the Alt IML Address switch. Within 2 minutes, the 8 4 2 1 indicator code will be a flashing 0101.

4. If you have *only* a customized system diskette, insert it in the 3274.

   If you have *both* a customized system *and* a customized load diskette, insert the customized load diskette.

   Within 1 minute, the 8 4 2 1 indicator code will be a flashing 1110.

5. Insert the *feature* diskette again. Within 1 minute, the 8 4 2 1 indicator code will be a steady 0001. If you are using the 3279, refer to Appendix E for the convergence procedure.

6. Look for a 3-digit sequence number in the upper-left corner of the 3278 or 3279 screen. The first one is 001. Beneath the sequence number are Xs that you replace by keying in the response to sequence number 001 (below). If the response you enter is acceptable, a new sequence number will be displayed. If the response is unacceptable, a 2-digit operator code will be displayed in the upper, center portion of the screen. See Figure 5-4 for the meaning of this code.
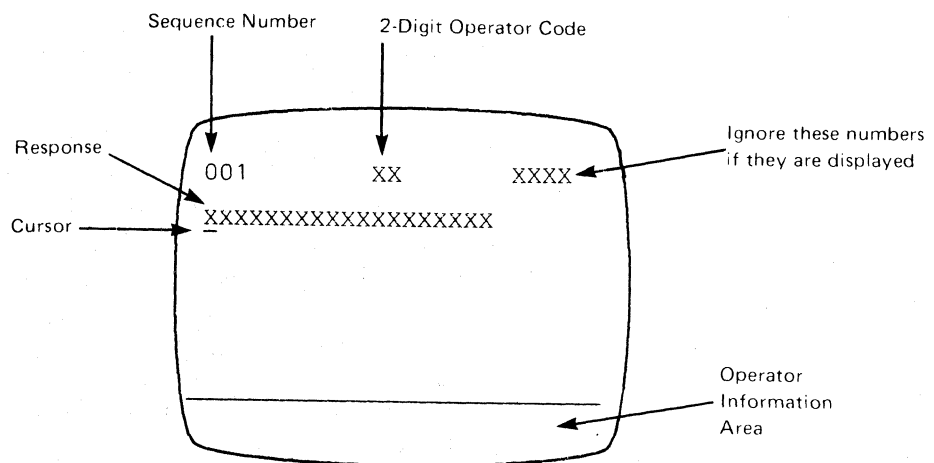
Note: *If a 76- or 88-key Japanese English or Japanese Katakana keyboard is used, press the key circled in Figure 5-2 before proceeding. The keyboard will be locked for about 10 seconds. When the keyboard unlocks, continue.*

- Key in the following characters in response to sequence number 001:

  1234567890ABCDEF
- Press the spacebar once.
- Key in the 2-digit validation number that is printed on the *system* diskette label.
- Press ENTER.

Note: *Use only the cursor move keys or tab key to reposition the cursor during this procedure.*

7. Key in a 0 (zero) in response to sequence number 011. Press ENTER.

8. At this time, either sequence number 021 is displayed (meaning that no printer authorization matrix has been defined) or the defined matrix is displayed.

   If sequence number 021 is displayed and if you have not been given a Printer Authorization Matrix Form, key in a 0 (zero) and press ENTER. If you have been given the Printer Authorization Matrix Form, key in a 1 and press ENTER; then follow the instructions on the form.

   If the printer authorization matrix is displayed and you are to make changes to the matrix, make the changes. Move the cursor to the entry for 901 (located at the bottom of the screen), change it to a 1, and press ENTER. If you have no changes, simply move the cursor to the entry for 901, change it to a 1, and press ENTER.

9. Key in the number of RPQ diskettes _____ being used in response to
   $\overline{(0-3)}$
   sequence number 031. Press ENTER.

   Note: *If you respond to sequence number 031 with a 1, 2, or 3, sequence number 032 may be displayed. If you have been given specific RPQ parameter instructions, follow those instructions. If not, key in a 0 in response to 032 and press ENTER.*

10. The entire set of sequence numbers should now be displayed on the display screen. Change the responses to the sequence numbers as required. After all changes have been made, move the cursor to the entry for sequence number 900, change it to a 1, and press ENTER. If all the entries are acceptable, the display screen will be cleared. Go to step 11.

    If any entry is unacceptable, the entry for sequence number 900 is changed back to a 0 (zero) and the unacceptable response is intensified. The operator code in the upper, center portion of the display refers to the greatest sequence number with its response intensified. (With the 3279, intensified characters are white and red instead of blue and green.) The meanings of the operator codes are shown in Figure 5-4. Check all responses that were changed, and correct any errors. Again, move the cursor to the entry for 900, change it to a 1, and press ENTER. If errors recur, report the problem.

11. Within 2 minutes, the 8 4 2 1 indicator code on the 3274 Control Unit should be flashing one of the following:

1100 — Replace the feature diskette with the *RPQ* diskette. *Do not press the IML pushbutton.* (If you do press the IML push-button, go back to step 3.) After the RPQ diskette is inserted, the code will change to 0111 within 30 seconds. If additional RPQ diskettes are required, the indicator code will again flash 1100. Repeat the procedure for each additional RPQ diskette. *At no time should you press the IML pushbutton.* When the RPQ diskette procedure is completed, the indicator code should be flashing 1110. Reinsert the *feature* diskette. *Do not press the IML pushbutton.* Within 2 minutes, the 8 4 2 1 indicator code will flash 1011 or 1101.

1101 — Replace the feature diskette with the *language* diskette. *Do not press the IML pushbutton.* (If you do press the IML push-button, go back to step 3.) Within 30 seconds, the indicator code will change to 0111 and then to flashing 1011 within 1 minute. When the indicator code is flashing 1011, replace the language diskette with the *system* diskette. *Do not press the IML pushbutton.* Within 15 minutes, the 8 4 2 1 indicator code will change to one of the following:

Note: If errors occur during this 15-minute period, a flashing 8 4 2 1 indicator code will appear. Figures 5-5 and 5-6 may aid in locating the cause.

0011 — Replace the system diskette with the *load* diskette. *Do not press the IML pushbutton.* (If you do press the IML pushbutton, go back to step 3.) Within 5 minutes the 8 4 2 1 indicator code will change to 1111 (all lights are on) indicating that customizing is successfully completed.

1111 — Modification is successfully completed.

1011 — Replace the feature diskette with the *system* diskette. *Do not press the IML pushbutton.* (If you do press the IML pushbutton, go back to step 3.) Within 15 minutes, the 8 4 2 1 indicator code will change to one of the following:

Note: If errors occur during this 15 minute period, a flashing 8 4 2 1 indicator code will appear. Figures 4-5 and 4-6 may aid in locating the cause.

0011 — Replace the system diskette with the *load* diskette. *Do not press the IML pushbutton.* (If you do press the IML pushbutton, go back to step 3.) Within 5 minutes the 8 4 2 1 indicator code will change to 1111 (all lights are on) indicating that customizing is successfully completed.

1111 — Modification is successfully completed.

The modification procedure is completed. Record the changes made during this procedure on the *IBM 3274 Configuration Data Card,* GA23-0046, stored in the pocket inside the 3274 customer access door on Models 1, 21, and 31 or in the diskette storage area on the front of the Model 51C.

Be sure the 3274 is attached to the appropriate communication facility. An IML of the 3274 may be initiated. During iML, errors may occur because of improper modification. The 8 4 2 1 indicator codes caused by these errors are shown in Figure 5-7.

Note: *During the modification procedure, only certain key positions are valid. Only those key positions shown below are to be used.*

Typewriter Keyboard

Data Entry Keypunch Keyboard

When New Line is required, press the PF 8 key.

When ENTER is specified, press the New Line key.
When RESET is required, press the PF 10 key.

Data Entry Keyboard
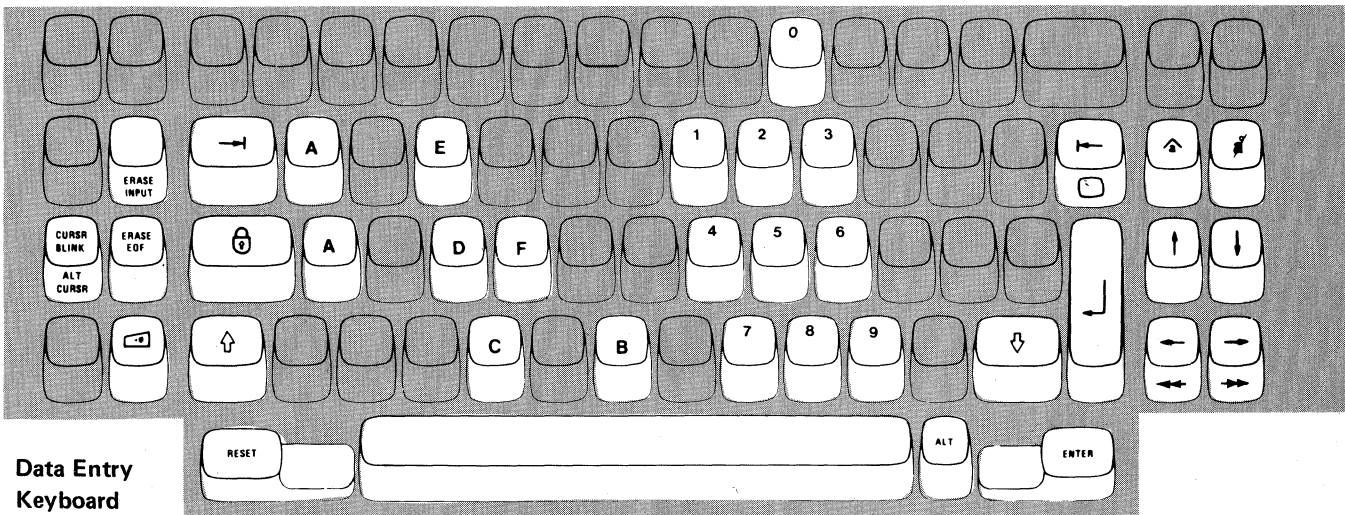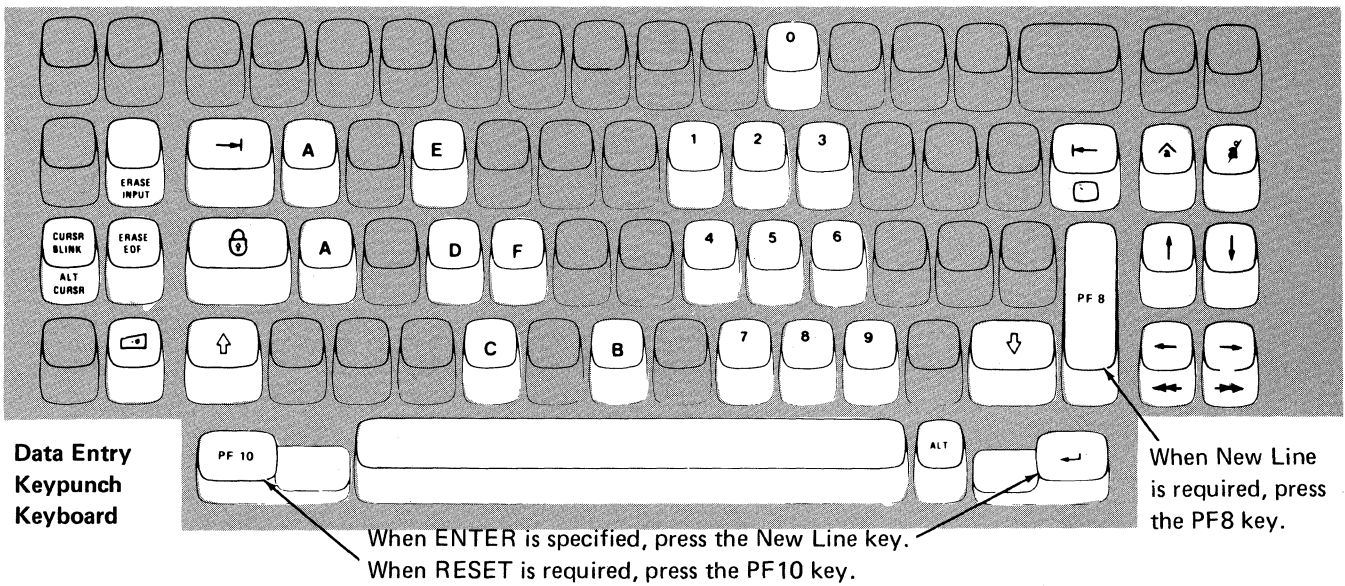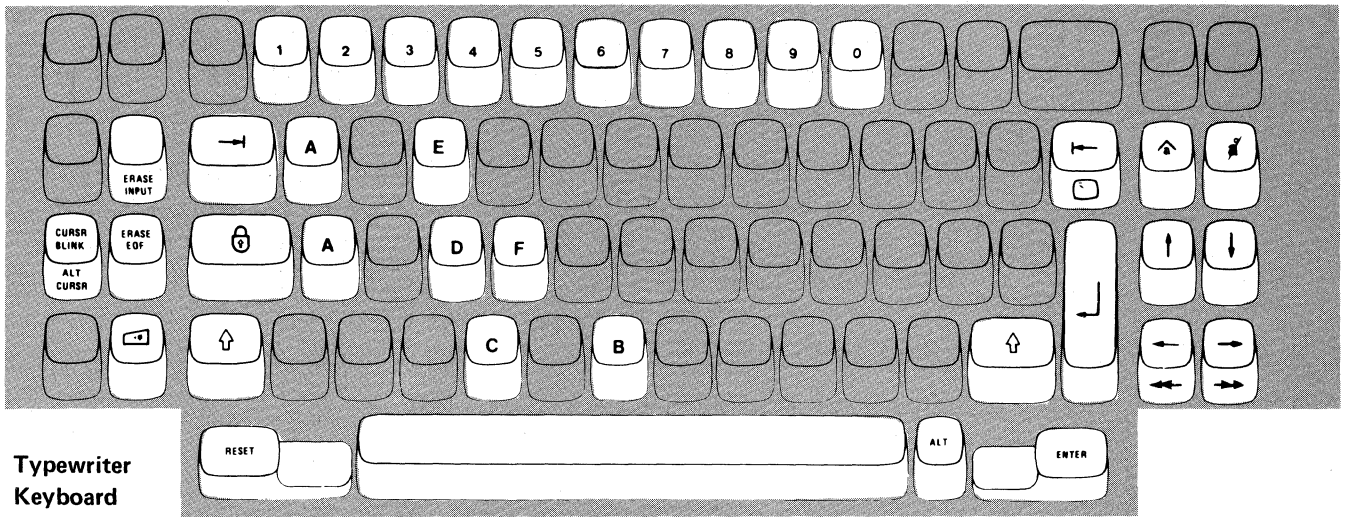
Figure 5-1. Valid Key Positions during the Modification Procedure

Note: *These drawings show the valid keys for both the 76- and 88-key keyboards. The PF keys located on the right side of the 88-key keyboards are not shown and are not valid during this procedure.*
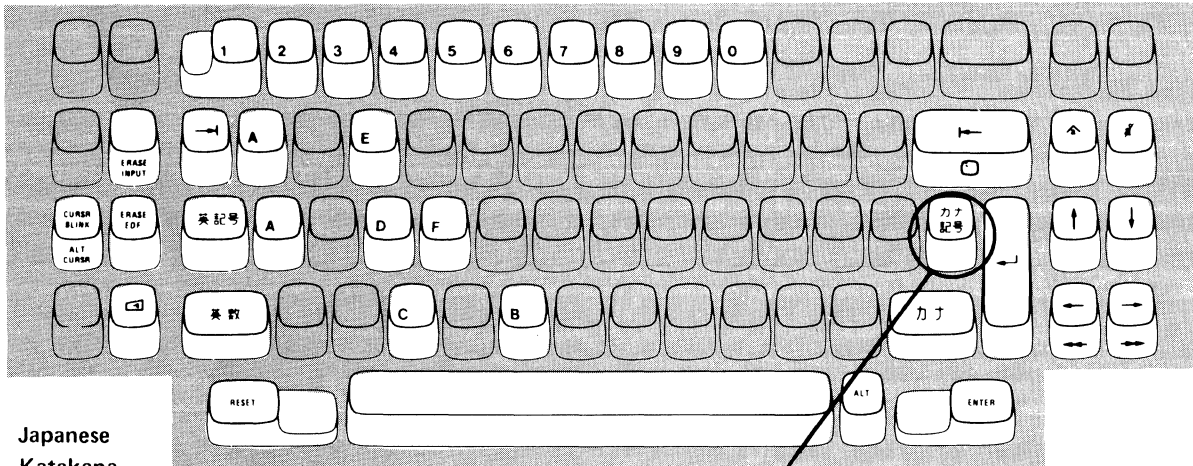
Japanese
Katakana
Typewriter
Keyboard

Press this key when sequence number 001 appears in upper left corner of the screen.
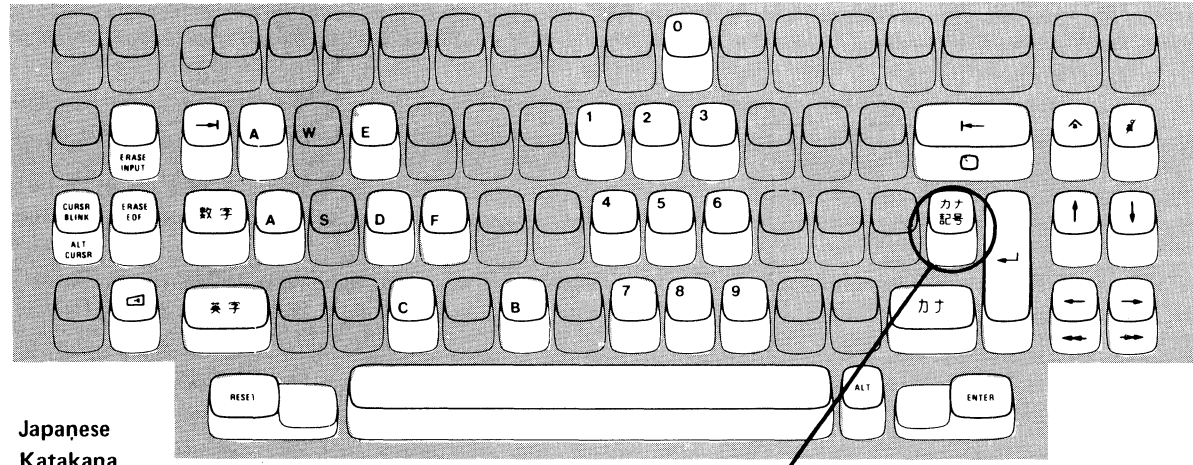
Japanese
Katakana
Data Entry
Keyboard

Press this key when sequence number 001 appears in upper left corner of the screen.

Japanese
English
Typewriter
Keyboard

Press this key when sequence number 001 appears in upper left corner of the screen.

Figure 5-2. Valid Key Positions during the Modification Procedure When Japanese Katakana and Japanese English Keyboards Are Used

3274 Diskette Insertion Procedure (All Models except 51C)

1. Open the customer access door, and locate the diskette reader enclosure.

Diskette Storage

Diskette Reader Enclosure

Customer Access Door

2. Open the diskette reader enclosure door by pressing the latch to the right.
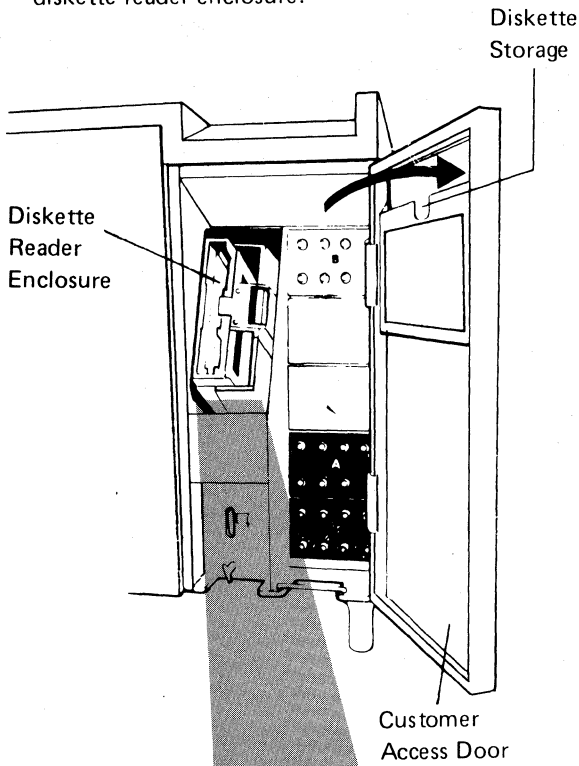
Diskette Reader Enclosure Door Latch

3. Remove the diskette to be used with the 3274 from its gray protective envelope, and insert it squarely into the enclosure. Note that the diskette label position is to the right.

Diskette Label
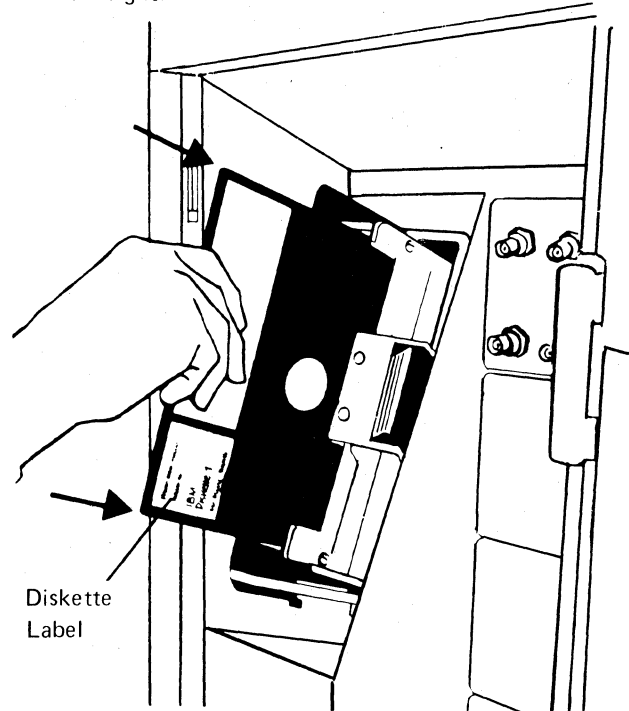
4. Close the diskette reader enclosure door by pushing the door to the left until it latches (clicks).
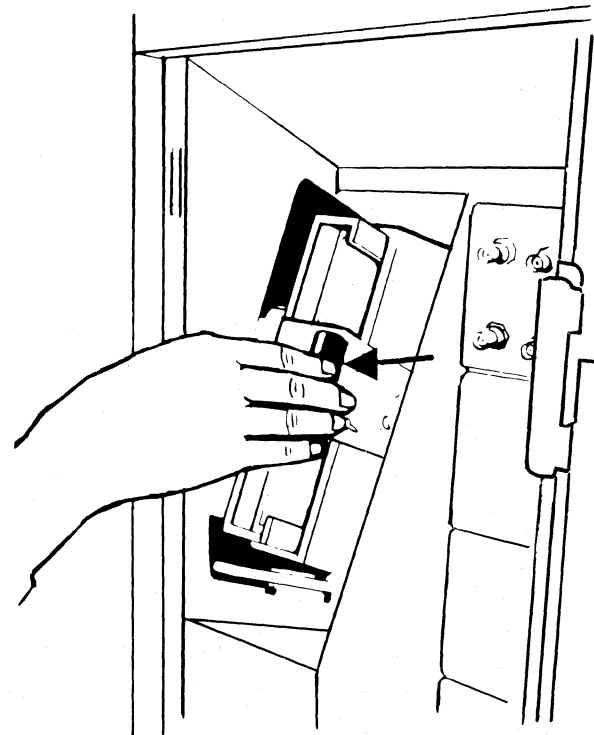
Figure 5-3 (Part 1 of 2). Inserting a Diskette into the 3274 Control Unit (during Modification)

3274 Diskette Insertion Procedure (Model 51C)

1. Open the diskette reader by turning the operator lever to the vertical position.
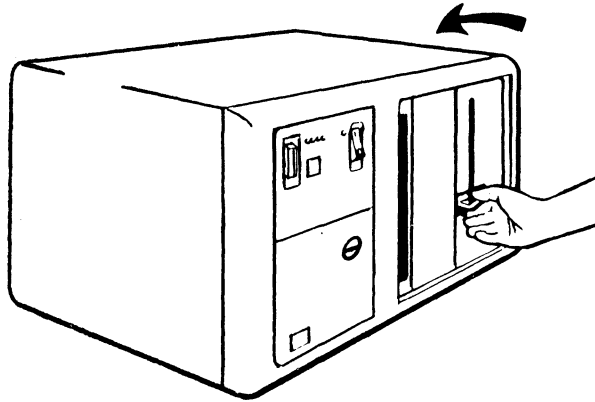
2. Remove the diskette to be used with the 3274 from its gray protective envelope, and insert it squarely into the enclosure. Note that the diskette label position is on your left.
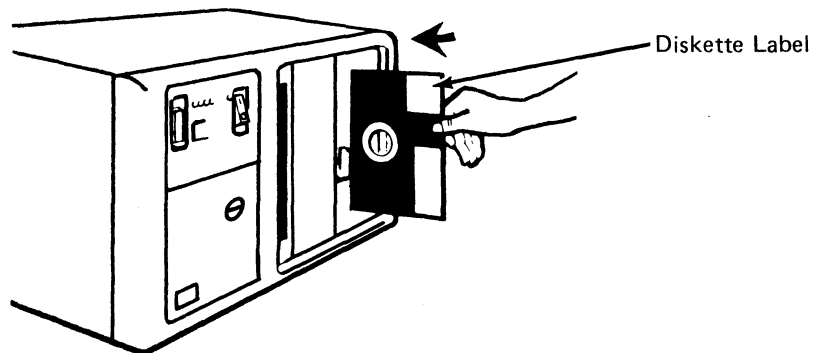
3. Close the diskette reader by turning the operator lever to the horizontal position.

Figure 5-3 (Part 2 of 2). Inserting a Diskette into the 3274 Control Unit (during Modification)

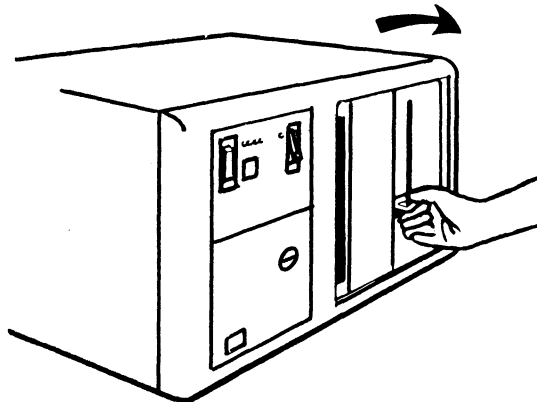| Code	Meaning	Action
01	One or more of the first 10 characters are incorrect.	Enter the correct response.
02	One or more of the 11th to 17th characters, including the space, are incorrect.	Enter the correct response.
03	1. One of the last two characters you entered in response to sequence number 001 is incorrect, or, 2. The diskette release level is not the same as the documentation level.	1. Enter the correct response. 2. Restart after matching diskette and documentation levels.
11[1]	You entered an invalid response (too many characters, value too high or too low, wrong character, etc.).	Enter the correct response.
12[1]	You entered a character other than A, B, C, D, E, 1, 2, 3, or 4 in response to sequence number 151 (3274 Model Designation).	Enter the correct response.
13[1]	Your response has too few characters.	Enter the correct response.
14[1]	1. The numeric total of the responses you entered for sequence numbers 111 (Number of Category B Terminals) and 112 (Number of Category A Terminals) is greater than 32 (Models 1, 21, and 31) or 12 (Model 51C). 2. Your response to sequence number 163 (Extended Character Set Adapter) is greater than your response to sequence number 112 (Number of Category A Terminals).	1. Enter the correct responses. 2. Change your response to sequence number 163 to the same value as, or a value less than, your response to sequence number 112.
21[1]	You made an unacceptable change during the modify sequence (number 999).	Recheck the entries, and correct them.
22[1]	You specified something in your configuration that is not compatible with the character set you specified in sequence number 321. If you specified the EBCDIC character set (321=0), sequence number 121 must not be "02." If you specified the ASCII character set (321=1): Sequence number 121 must be "02" Sequence number 131 must be "1" Sequence numbers 132, 133, 134, and 135 must be "0" Sequence numbers 162, 163, 164, and 165 must be "0" Sequence number 166 must be "A"	Verify and enter the correct response(s).
23[1]	One or more of your responses are not compatible with the response to sequence number 331 (BSC or SDLC Protocol).	Verify and enter the correct responses.
24[1]	1. All your responses to sequence numbers 131 through 135 (keyboard types) and 0's (at least one must be 1), or 2. Your response to sequence number 113 (Extended Function Store) was something other than 0000 or A000. Your response indicates that the Extended Function Store feature is installed in your 3274 when, in fact, the feature is not installed.	1. Verify and enter the correct responses. 2. Verify and enter the correct response.
25[1]	1. If this response is to sequence number 133 (Data Entry Keypunch Layout Keyboard), you specified the Katakana language (121=17) and a Data Entry Keypunch Layout Keyboard (133=1). The Data Entry Keypunch Layout Keyboard cannot be specified with the Katakana language. 2. If this response is to sequence number 113 (Entended Function Store), the 3274 has less storage than indicated in your response to sequence number 113. 3. You specified a language other than 01 (U.S. English) to sequence number 121 and Text (135=1). Text cannot be specified with languages other than U.S. English.	1. Verify the enter the correct response. 2. Report the problem. 3. Verify and enter the correct response.
26[1]	You do not have enough storage to support all the features you have selected.	Report the problem and verify that the storage specified in response to sequence number 113 is correct. (The storage requirements for the features you have selected may have to be recalculated using the storage-requirement tables in Appendix I.)
27[1]	1. You specified the Portuguese language (121=18). This is not allowed with your configuration. 2. You specified SFAP (162=1) and a language that is not allowed with SFAP (121=02, 08, 10, 13, 20, 26, or 27). 3. You specified a language that is not allowed with a 3290 Display Terminal (121=02, 06, 08, 09, 10, 13, 20, 26, or 27).	1. Specify Portuguese (Alternate) (127=28). 2. Verify and enter the correct responses. 3. Verify and enter the correct response.

[1] If any entry is unacceptable, the entry for sequence number 900 is changed back to 0 (zero) and the unacceptable value is intensified.

Figure 5-4 (Part 1 of 2). Operator Codes during Modification Procedure Only

Code	Meaning	Action
28[1]	Your responses to sequence numbers 113 (Extended Function Store) and 151 (3274 Model Designation) are incompatible.	Verify and enter the correct response.
29	You specified an Attribute Select keyboard (166=B or C), but your did not specify a Typewriter keyboard (131=1) or an APL keyboard (132=1).	Either change 166 to "A" or change 131 and/or 134 to "1."
30	1. You have specified a starting address for Multiple Interactive Screens (sequence number 171), but you have not specified logical terminal addresses. 2. You have specified logical terminal addresses for Multiple Interactive Screens (sequence number 171), but you have not specified a starting address.	Review instructions for defining Multiple Interactive Screens (Appendix J) and enter the correct response.
31	You have specified an invalid starting address for Multiple Interactive Screens (sequence number 171).	Specify a starting address that is not port A0, but is low enough to allow for your required number of terminals.
32	Your response to either sequence number 112 or 171 is incorrect. You have specified more logical terminals than your system will allow.	Review Appendix B, remembering that if using BSC or a 3274 Model D, you cannot specify more than 32 terminal addresses. If using SDLC or 3274 Model A, you cannot specify more than 128 terminal addresses.
33	Zero has been specified in sequence number 170, but you specified nonzero responses to sequence numbers 171, 173, 175, and 176.	Either specify 1 to sequence number 170, or zeros to sequence numbers 171, 173, 175, and 176.
34	You specified a Category B device in response to sequence number 111, but you specified a 3290 in sequence number 170. Category B devices are not allowed with 3290s.	Verify and enter the correct responses.
36	You have specified a nonzero response for sequence number 139, but a zero response for sequence number 170. 170 must be 1 for 139 to be nonzero.	Verify responses to sequence numbers 139 and 170, then enter the correct response(s).
99	Your entries are acceptable, but the entry for sequence number 900 or 901 has not been changed to a 1.	Change 900 or 901 entry to a 1.

[1] If any entry is unacceptable, the entry for sequence number 900 is changed back to 0 (zero) and the unacceptable value is intensified.

Figure 5-4 (Part 2 of 2). Operator Codes during Modification Procedure Only

Steady Code	Diskette Mounted	Meaning	Action
0001	Feature	Customizing being performed	None.
0010	Any (indication lasts for 3 minutes or more)	Diskette improperly inserted or an internal 3274 error	Insert diskette properly and retry.
0011	Feature	Customizing being performed	None.
0100	Feature	Patch, printer authorization matrix, or RPQ being performed	None.
0101	Feature	Configuration being performed	None.
0110	Feature	Modification being performed	None.
0111	Feature, language, or RPQ	Normal 3274 operation	None.
1000	System (customizing in process)	Normal 3274 operation	None.
1001	Any	Internal 3274 error	Retry. If the error recurs, follow your local procedure for problem recovery.
1010	Any	Internal 3274 error	Retry. If the error recurs, follow your local procedure for problem recovery.
1101	Any (customizing procedure in progress)	1. IML button pressed while diskette is being changed, or 2. A bad or uncustomized system diskette is being used	1. Recustomize. Do not press the IML pushbutton unless instructed to do so. 2. Insert a good customized system diskette.
1111	System or load (IML not performed)	Customizing is completed	IML can be performed.

Figure 5-5. Steady 8 4 2 1 Indicator Codes during the Modification Procedure Only

Flashing Code[1]	Diskette Mounted	Meaning	Action
0000 0011	System	Load diskette request	Insert load diskette.
0000 0101	Any	System or load diskette request	Insert system or load diskette.
0000 1010	System	A diskette read error occured.	Retry. If the error recurs, follow your local procedure for problem recovery.
0000 1011	Any	System diskette request	Insert system diskette.
0000 1100	Any	RPQ diskette request	Insert RPQ diskette.
0000 1101	Any	Language diskette request	Insert language diskette.
0000 1110	Any	Feature diskette request	Insert feature diskette.
0100 0010	System	Configuration on system diskette being used for update-diskette procedure is not compatible with this 3274	Use a system diskette with a compatible configuration.
1000 0001	System	Uncustomized system diskette being used during update procedure	Use customized system diskette.
1001 0110	Any	Wrong level diskette being used	Use correct level diskette.
1111 0001	Feature	On/Off switch or TEST key pressed instead of ENTER	Retry. If the error recurs, follow your local procedure for problem recovery.
	System	Internal 3274 error	Follow your local procedure for problem recovery.
1111 0010	Feature	3278 Model 2 or higher is not attached to port A0.	Attach 3278 Model 2, its equivalent, or higher to port A0. Retry customizing.
1111 0011	Feature	Internal 3274 error	Follow your local procedure for problem recovery.
1111 0100	System	Internal 3274 error	Retry. If the error recurs, follow your local procedure for problem recovery.
1111 0101	System	Internal 3274 error	Retry. If the error recurs, follow your local procedure for problem recovery.
	Feature	On/Off switch or TEST key on the 3278 pressed instead of ENTER	
1111 0110	RPQ	Incompatible RPQs	Follow your local procedure for problem recovery.
	Feature	Internal 3274 error	
1111 0111	System	Internal 3274 error	Follow your local procedure for problem recovery.
1111 1000	System	Internal 3274 error	Follow your local procedure for problem recovery.
1111 1001	System	Internal 3274 error	Follow your local procedure for problem recovery.
1111 1010	Any	Internal 3274 error	Follow your local procedure for problem recovery.
1111 1011	System	Internal 3274 error	Follow your local procedure for problem recovery.
1111 1100	Any	Diskette drive error or a bad diskette	Retry. If the error recurs, follow your local procedure for problem recovery.
1111 1101	System or feature	Diskette drive error or a bad diskette	Retry. If the error recurs, follow your local procedure for problem recovery.
1111 1110	Any	Internal 3274 error	Retry. If the error recurs, follow your local procedure for problem recovery.

[1] These codes will flash alternately as shown, for example, 0000, 1011, 0000, 1011.

Figure 5-6. Flashing 8 4 2 1 Indicator Codes during the Modification Procedure Only

Steady Code	Flashing Code[1]	Diskette Mounted	Meaning	Action
–	0000 0101	System	Internal 3274 error or wrong response to sequence number 113 during customizing procedure	Check response to sequence number 113, and retry. If the error recurs, follow your local procedure for problem recovery.
–	0000 0110	System	Internal 3274 error or wrong response to sequence number 111, 112, 151, or 351 during customizing procedure	Check response to sequence number 111, 112, 151, or 351, and retry. If the error recurs, follow your local procedure for problem recovery.
–	0000 0111	System	1. Internal 3274 error, or 2. Wrong response to sequence number 311 or 343, or 3. The 3274 is not connected to the communication facility	1 and 2. Check responses to sequence numbers 311 and 343, and retry. 3. Connect the 3274 to the communication facility. If the error recurs, follow your local procedure for problem recovery.
–	0000 1000	System	Internal 3274 error or wrong response to sequence number 111 during customizing procedure	Check response to sequence number 111, and retry. If the error recurs, follow your local procedure for problem recovery.
1101	–	System	Uncustomized system diskette	Insert customized system diskette.
1110	–	System	Insufficient storage	Check response to sequence number 113, and retry. If the error recurs, follow your local procedure for problem recovery.

[1] These codes will flash alternately as shown, for example, 0000, 0101, 0000, 0101.

Note: *These indicators may be caused by something other than incorrect customizing. Further aids can be found in the* IBM 3270 Information Display System: 3274 Control Unit Problem Determination Guide, *GA27-2850.*

Figure 5-7. 8 4 2 1 Indicator Codes during IML That May Result from an Incorrect Modification Procedure

Printer Authorization Matrix Form

In response to sequence number 022, enter the characters (below) supplied by the planner in the appropriate groups on your display screen. If a group already is displayed as AA M XXXX YYYY YYYY, your entry will overwrite these characters. When you have completed all your entries, move the cursor to the zero after sequence number 901 at the bottom of the screen, change it to a 1, and press ENTER. Any entry that is not valid will be intensified at this time and the 1 you entered will change back to a 0 (zero). Correct the invalid entry, and return to 901. Again, change the zero to a 1, and press ENTER. When all entries are valid, the printer authorization matrix display will be replaced by the next customizing sequence number. (If, at any time during this procedure, you wish to cancel any entries you have just made, change the 0 (zero) after the 901 to A and press ENTER.) Return to your original instructions.

To delete an entry, move the cursor (with cursor-move keys or tab key) to the leftmost position of the entry (the Printer Port Address) and press the spacebar twice. The entire matrix, or as many entries as desired, can be deleted in this manner. After all changes have been made, press ENTER. All deleted entries will be displayed as AA M XXXX YYYY YYYY. When the matrix is satisfactorily defined, move the cursor to the zero after sequence number 901, change it to a 1, and press ENTER.

	Printer Port Address		Printer Mode	Printer Class Assignment				Source Device List							
	A	A	M	X	X	X	X	Y	Y	Y	Y	Y	Y	Y	Y
1)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
2)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
3)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
4)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
5)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
6)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
7)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
8)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
9)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
10)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
11)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
12)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
13)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
14)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
15)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
16)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_

	Printer Port Address		Printer Mode	Printer Class Assignment				Source Device List							
	A	A	M	X	X	X	X	Y	Y	Y	Y	Y	Y	Y	Y
17)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
18)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
19)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
20)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
21)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
22)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
23)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
24)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
25)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
26)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
27)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
28)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
29)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
30)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
31)	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_

Chapter 6. Backup Diskette Generation Procedures

Each 3274 Control Unit is shipped with two uncustomized system diskettes. If you are using 3290 terminals, you also received two uncustomized load diskettes. You customize one system diskette (or load diskette, if using 3290) using the initial customizing procedure in Chapter 4, and use this customized diskette as the primary IML diskette. The second system or load diskette may be used as a duplicate of, or backup for, the primary IML diskette. A backup diskette is generated by performing one of the two recommended procedures in this chapter:

- The Backup System Diskette Generation Procedure for system diskettes. (A 3178, 3278, or 3279 display station is required.)

- The Backup Load Diskette Generation Procedure for load diskettes. (No display station is required.)

Backup System Diskette

The planner should enter the following information on the Backup System Diskette Form:

1. The type of keyboard (typewriter or data entry) to be used by the operator.

   Note: If using a 76- or 88-key Japanese English or Japanese Katakana keyboard, specify the number of keys and keyboard type.

2. In step 1, the identification of each diskette to be used.

3. In step 7, the response to sequence number 031 (number of RPQ diskettes to be used). If your response to sequence number 031 is not 0, you may have to enter a response to sequence number 032. See "032 (Request RPQ Parameter List)" in Chapter 3.

The filled-in Backup System Diskette Form and the following information should be given to the operator who is to perform this backup system diskette generation at the 3178, 3278, or 3279 display station.

- Keyboard diagrams showing the valid key positions for backup diskette generation (Figures 6-1 and 6-2).

- A diagram showing how to insert diskettes into the 3274 Control Unit (Figure 6-3).

- A chart giving the meanings of, and recommended actions for, the operator codes that may appear on the 3178, 3278 Display Station, or 3279 Color Display Station during backup diskette generation (Figure 6-4).

- Charts giving the meanings of, and recommended actions for, the 8 4 2 1 indicator codes that appear on the 3274 control panel during the backup diskette generation (Figures 6-5 and 6-6).

- A chart giving the meanings of, and recommended actions for, the 8 4 2 1 indicator codes that could appear on the 3274 control panel during IML as a result of improper backup diskette generation (Figure 6-7).

Backup Load Diskette

The planner should enter the identification of each diskette in step 1 of the Backup Load Diskette Form. This form and the following information should be given to the operator who is to perform this backup load generation at the 3274 Control Unit.

*   A diagram showing how to insert diskettes into the 3274 Control Unit (Figure 6-3).

*   Charts giving the meanings of, and recommended actions for, the 8 4 2 1 indicator codes that appear on the 3274 control panel during the backup diskette generation (Figures 6-5 and 6-6).

*   A chart giving the meanings of, and recommended actions for, the 8 4 2 1 indicator codes that could appear on the 3274 control panel during IML as a result of improper backup diskette generation (Figure 6-7).
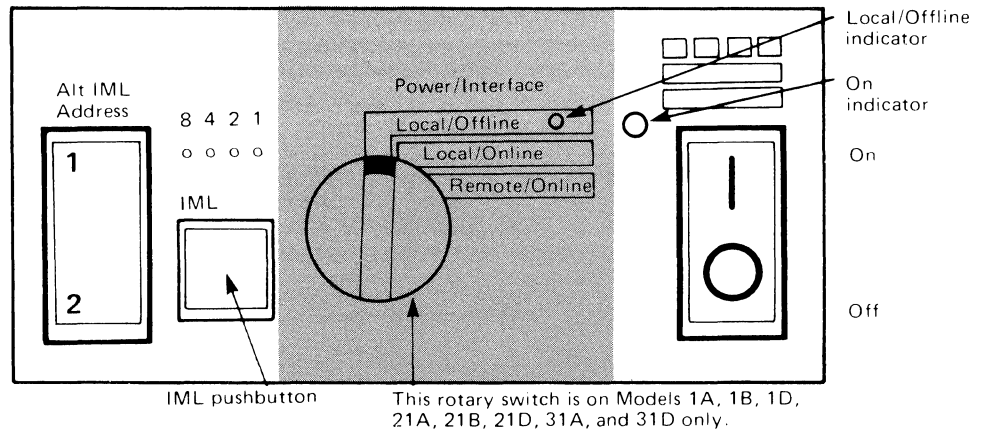
Backup System Diskette Form

Review this entire form before starting the procedure to create a backup system diskette. Unit operating procedures are described in the *IBM 3178 Display Station Operator's Reference Guide,* GA18-2128, the *IBM 3278 Display Station Operator's Guide,* GA27-2890, and in the *IBM 3279 Color Display Station Operator's Guide,* GA33-3057.

This procedure duplicates the existing system diskette. *If you do not get the expected result in any step, start over at step 1. If you still do not get the expected result, report the problem.*

There are four indicators, labeled 8 4 2 1, on the 3274 control panel. The meanings of the 8 4 2 1 indicator codes are shown in Figures 6-5 and 6-6. If an error occurs during this procedure, the 8 4 2 1 indicator code may help you locate the cause. Within this form, an on indicator is called a 1, an off indicator a 0 (zero). Example: 8 4 2 1

                                      * * o * = 1101

3274 Control Panel

IML pushbutton   This rotary switch is on Models 1A, 1B, 1D, 21A, 21B, 21D, 31A, and 31D only.

Type of 3178, 3278, or 3279 keyboard to be used:

Note: *See Figure 6-1 or 6-2 before continuing.*

1. Obtain the:
   Feature diskette   _____
   Customized system diskette (diskette to be duplicated)   _____
   Backup system diskette (diskette to be customized)   _____
   Language diskette (if applicable)   _____
   RPQ diskette(s) (if applicable)   1. _____
                                                          2. _____
                                                          3. _____

2. Ensure that the 3274 Control Unit and the 3178, 3278 Display Station, or 3279 Color Display Station have power switched on. The 3178, 3278, or 3279 must have a keyboard and must be attached to port A0 of the 3274.

   Note: *When customizing a 3274 Model 1A, 1B, 1D, 21A, 21B, 21D, 31A, or 31D, do not set the on/off switch to the off position unless the rotary switch on the control panel is in the Local/Offline position and the Local/Offline indicator is lit. The Power/Interface switch must be in the Local/Offline position and the Local/Offline indicator must be on.*

3. Insert the *feature* diskette (see Figure 6-3) and, holding the Alt IML Address switch in position 1, press and release the IML button; then release the Alt IML Address switch. Within 2 minutes, the 8 4 2 1 indicator code will be a flashing 0101.

4. Insert the *customized system* diskette. Within 1 minute, the 8 4 2 1 indicator code will be a flashing 1110.

5. Insert the *feature* diskette again. Within 1 minute, the 8 4 2 1 indicator code will be a steady 0001. If you are using a 3279, refer to Appendix E for the convergence procedure.

6. Look for a 3-digit sequence number in the upper-left corner of the 3178, 3278, or 3279 screen. The first one is 001. Beneath the sequence number are Xs that you replace by keying in the response to sequence number 001 (below). If the response you enter is acceptable, a new sequence number will be displayed. If the response is unacceptable, a 2-digit operator code will be displayed in the upper, center portion of the screen. See Figure 6-4 for the meaning of this code.
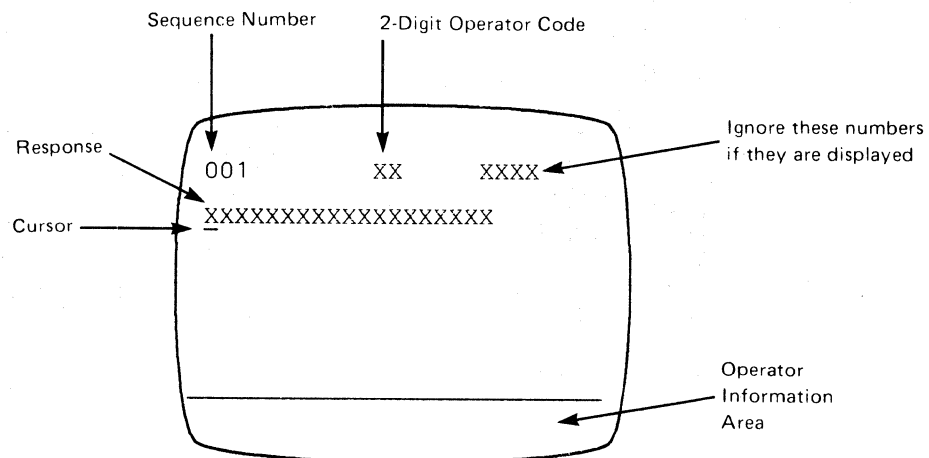
Note: *If a 76- or 88-key Japanese English or Japanese Katakana keyboard is used, press the key circled in Figure 6-2 before proceeding. The keyboard will be locked for about 10 seconds. When the keyboard unlocks, continue.*

- Key in the following characters in response to sequence number 001:

    1234567890ABCDEF

- Press the spacebar once.
- Key in the 2-digit validation number that is printed on the *system* diskette label.
- Press ENTER.

    Note: *Use only the cursor move keys or tab key to reposition the cursor during this procedure.*

7. Key in a 0 (zero) in response to sequence number 011. Press ENTER.

8. At this time, either sequence number 021 is displayed (meaning that no printer authorization matrix has been defined) or the defined matrix is displayed.

If sequence number 021 is displayed, key in a 0 (zero). Press ENTER. If the matrix is displayed, move the cursor to the zero after sequence number 901 and change it to a 1. Press ENTER.

9. Key in the number of RPQ diskettes _____ being used in response to
        (0–3)
sequence number 031. Press ENTER.

Note: *If you respond to sequence number 031 with a 1, 2, or 3, sequence number 032 may be displayed. If you have been given specific RPQ parameter instructions, follow those instructions. If not, key in a 0 in response to 032 and press ENTER.*

10. The entire set of sequence numbers should now be displayed on the screen. Move the cursor to the zero after sequence number 900, and change it to a 1. Press ENTER.

11. Within 2 minutes, the 8 4 2 1 indicator code on the 3274 Control Unit should be flashing one of the following:

1100 — Replace the feature diskette with the *RPQ* diskette. *Do not press the IML pushbutton.* (If you do press the IML push-button, go back to step 3.) After the RPQ diskette is inserted, the code will change to 0111 within 30 seconds. If additional RPQ diskettes are required, the indicator code will again flash 1100. Repeat the procedure for each additional RPQ diskette. *At no time should you press the IML pushbutton.* When the RPQ diskette procedure is completed, the indicator code should be flashing 1110. Reinsert the *feature* diskette. *Do not press the IML pushbutton.* Within 2 minutes, the 8 4 2 1 indicator code will flash 1011 or 1101.

1011 — Replace the feature diskette with the *backup system* diskette. *Do not press the IML pushbutton.* (If you do, go back to step 3.) Within 15 minutes, the indicator code will change to 1111 (all lights are on), indicating backup system diskette generation is successfully completed. If errors occur during this period, a flashing 8 4 2 1 indicator code appears. Figures 6-5 and 6-6 may help you locate the cause.

1101 — Replace the feature diskette with the *language* diskette. *Do not press the IML pushbutton.* (If you do press the IML push-button, go back to step 3.) Within 30 seconds, the indicator code will change to 0111 and then to flashing 1011. When the indicator code is flashing 1011 within 1 minute, replace the language diskette with the *backup system* diskette. *Do not press the IML pushbutton.* Within 15 minutes, the indicator code will flash 1111 (all lights are on), indicating backup system diskette generation is successfully completed. If errors occur during this 15-minute period, a flashing 8 4 2 1 indicator code will appear. Figure 6-5 and 6-6 may help you locate the cause.

The newly created *backup* system diskette may now be used as well as the existing *customized* system diskette. Be sure the 3274 is attached to the appropriate communication facility. The backup system diskette may now be used to initiate an IML of the 3274. During IML, errors may occur because of improper backup diskette creation. Figure 6-7 shows the 8 4 2 1 indicator codes caused by these errors.

Backup Load Diskette Form

Review this entire form before starting the procedure to create a backup load diskette. Unit operating procedures are described in the *IBM 3274 Operator's Reference and Problem Determination Guide,* GA27-2850.

This procedure duplicates the existing load diskette. *If you do not get the expected result in any step, start over at step 1. If you still do not get the expected result, report the problem.*

There are four indicators, labeled 8 4 2 1, on the 3274 control panel. The meanings of the 8 4 2 1 indicator codes are shown in Figures 6-5 and 6-6. If an error occurs during this procedure, the 8 4 2 1 indicator code may help you locate the cause. Within this form, an on indicator is called a 1, an off indicator a 0 (zero). Example: 8 4 2 1
* * o * = 1101

3274 Control Panel

IML pushbutton

This rotary switch is on Models 1A, 1B, 1D, 21A, 21B, 21D, 31A, and 31D only.
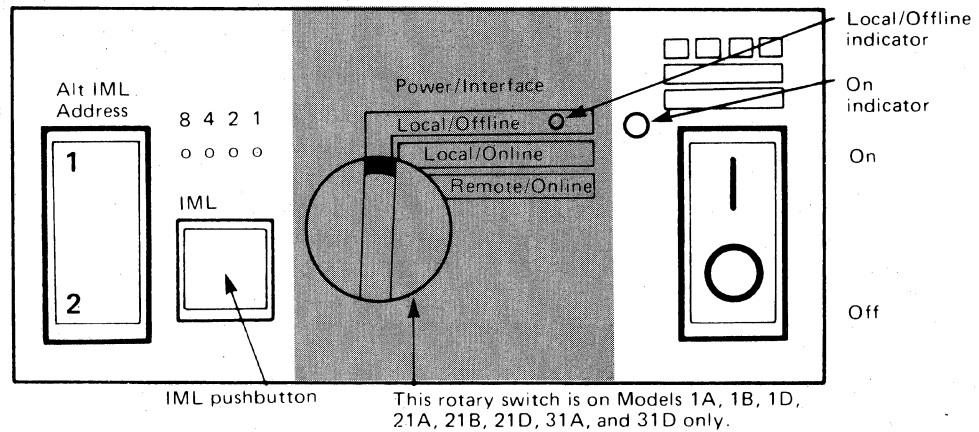
1. Obtain:

   System diskette used to initially customize the load diskette (diskette to be duplicated)

   Backup load diskette (diskette to be customized)

2. Ensure that the 3274 Control Unit has power switched on.

   Note: *When customizing a 3274 Model A, B, or D, do not set the on/off switch to the off position unless the rotary switch on the control panel is in the Local/Offline position and the Local/Offline indicator is lit. The Power/Interface switch must be in the Local/Offline position and the Local/Offline indicator must be on.*

3. Insert the *system* diskette (see Figure 6-3) and, holding the Alt IML Address switch in position 1, press and release the IML button; then release the Alt IML Address switch. Within 1 minute, the 8 4 2 1 indicator code will be flashing 0011.

4. Insert the *load* diskette. *DO NOT PRESS IML.* Within 5 minutes, the 8 4 2 1 indicator code will display a solid 1111, indicating backup load diskette generation is successfully completed. If errors occur during this 5 minute period, a flashing 8 4 2 1 indicator code will appear. Figures 6-5 and 6-6 may help you locate the cause.

The newly created backup load diskette may now be used as well as the existing customized load diskette.

Be sure the 3274 is attached to the appropriate communication facility. The backup load diskette may now be used to initiate an IML of the 3274 Control Unit. During IML, errors may occur because of improper backup diskette creation. The 8 4 2 1 indicator codes caused by these errors are shown in Figure 6-7.

Note: *During backup diskette generation, only certain key positions are valid. Only those key positions shown below are to be used.*

Typewriter Keyboard

Data Entry Keypunch Keyboard

When New Line is required, press the PF8 key.

When ENTER is specified, press the New Line key.
When RESET is required, press the PF10 key.
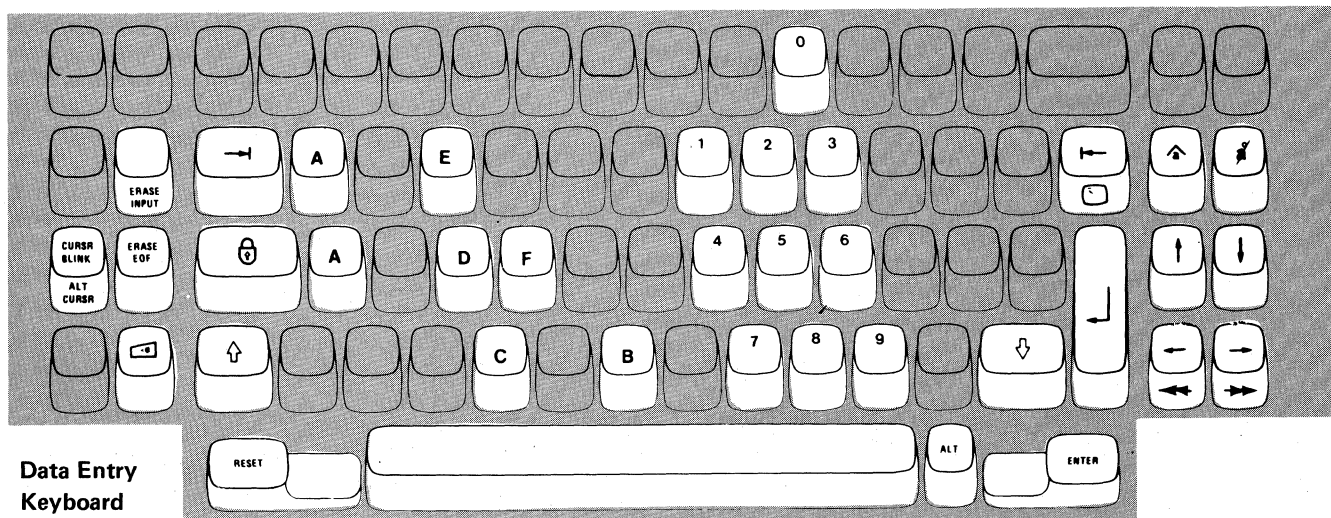
Data Entry Keyboard

Figure 6-1. Valid Key Positions during Backup Diskette Generation

Note: *These drawings show the valid keys for both the 76- and 88-key keyboards. The PF keys located on the right side of the 88-key keyboards are not shown and are not valid during this procedure.*
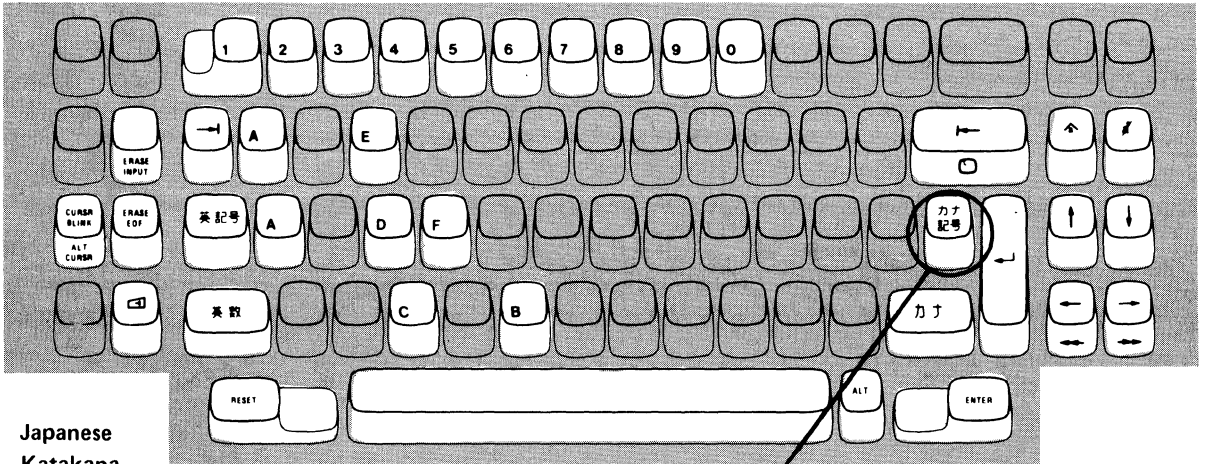
Japanese
Katakana
Typewriter
Keyboard

Press this key when sequence number 001 appears in upper left corner of the screen.

Japanese
Katakana
Data Entry
Keyboard

Press this key when sequence number 001 appears in upper left corner of the screen.

Japanese
English
Typewriter
Keyboard

Press this key when sequence number 001 appears in upper left corner of the screen.

Figure 6-2. Valid Key Positions during Backup Diskette Generation When Japanese Katakana and Japanese English
Keyboards Are Used

1. Open the customer access door, and locate the diskette reader enclosure.

Diskette Storage

Diskette Reader Enclosure

Customer Access Door

2. Open the diskette reader enclosure door by pressing the latch to the right.
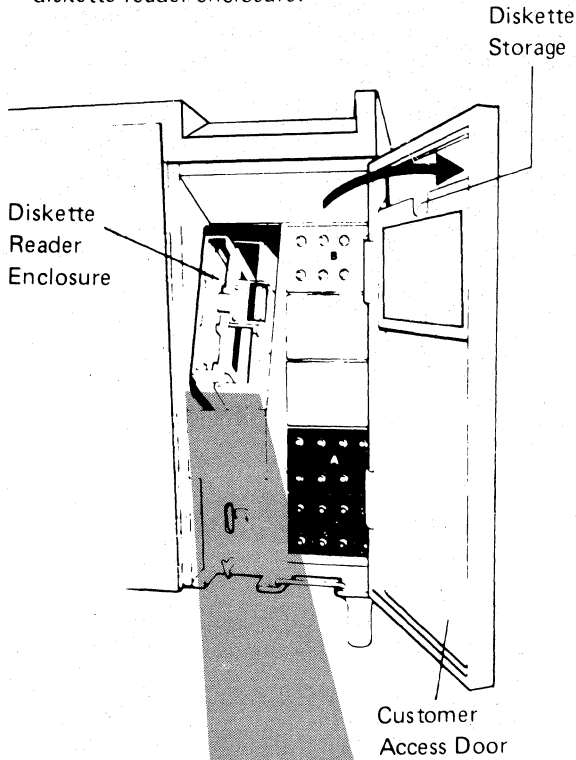
Diskette Reader Enclosure Door Latch

3. Remove the diskette to be used with the 3274 from its gray protective envelope, and insert it squarely into the enclosure. Note that the diskette label position is to the right.

Diskette Label
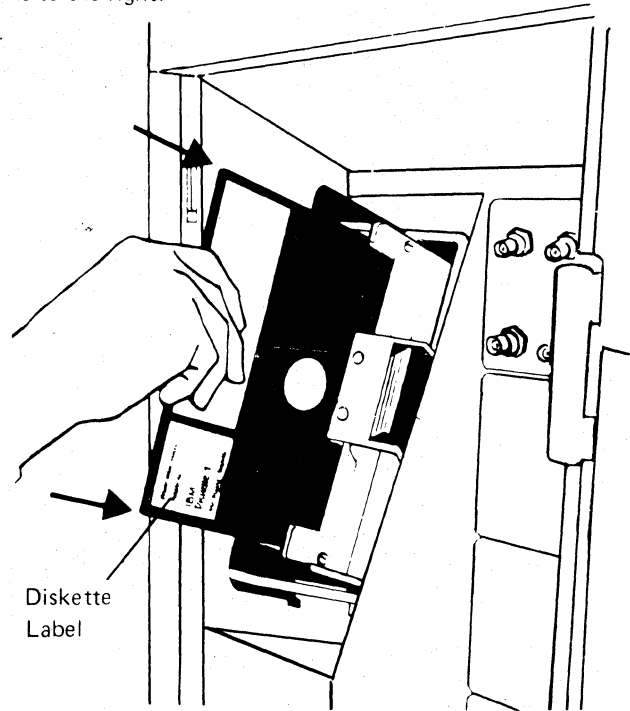
4. Close the diskette reader enclosure door by pushing the door to the left until it latches (clicks).
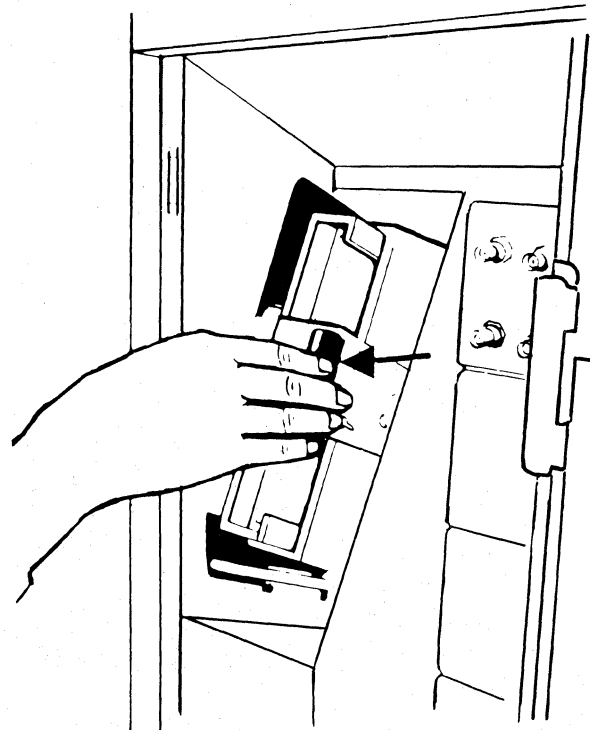
Figure 6-3 (Part 1 of 2). Inserting a Diskette into the 3274 Control Unit (during Backup Diskette Generation)

3274 Diskette Insertion Procedure (Model 51C)

1. Open the diskette reader by turning the operator lever to the vertical position.
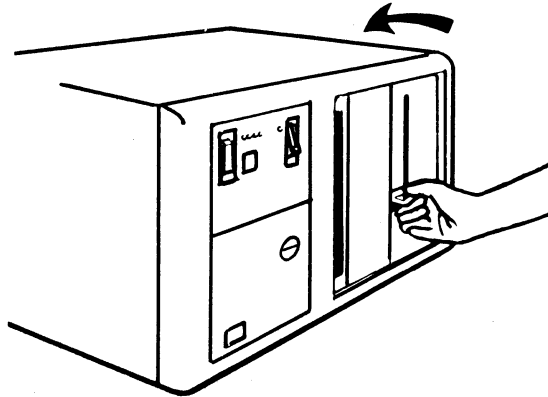
2. Remove the diskette to be used with the 3274 from its gray protective envelope, and insert it squarely into the enclosure. Note that the diskette label position is on your left.

Diskette Label

3. Close the diskette reader by turning the operator lever to the horizontal position.

Figure 6-3 (Part 2 of 2). Inserting a Diskette into the 3274 Control Unit (during Backup Diskette Generation)

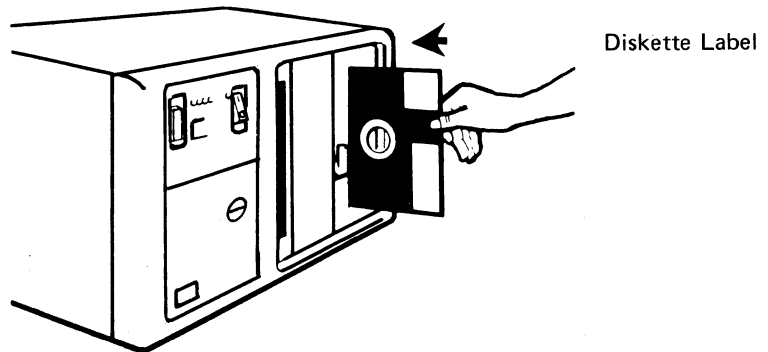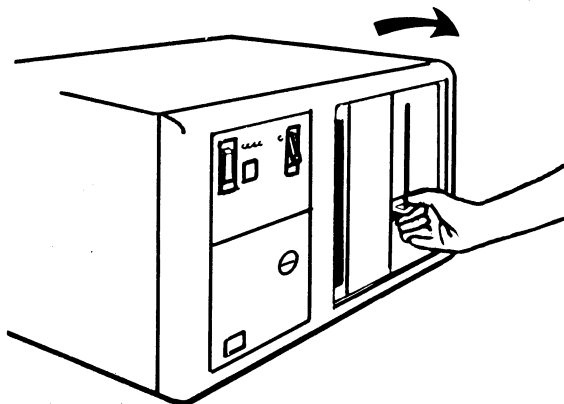| Code	Meaning	Action
01	One or more of the first 10 characters are incorrect.	Enter the correct response.
02	One or more of the 11th to 17th characters, including the space, are incorrect.	Enter the correct response.
03	1. One of the last two characters you entered in response to sequence number 001 is incorrect, or, 2. The diskette release level is not the same as the documentation level.	1. Enter the correct response. 2. Restart after matching diskette and documentation levels.
11[1]	You entered an invalid response (too many characters, value too high or too low, wrong character, etc.).	Enter the correct response.
12[1]	You entered a character other than A, B, C, D, E, 1, 2, 3, or 4 in response to sequence number 151 (3274 Model Designation).	Enter the correct response.
13[1]	Your response has too few characters.	Enter the correct response.
14[1]	1. The numeric total of the responses you entered for sequence numbers 111 (Number of Category B Terminals) and 112 (Number of Category A Terminals) is greater than 32 (Models 1, 21, and 31) or 12 (Model 51C). 2. Your response to sequence number 163 (Extended Character Set Adapter) is greater than your response to sequence number 112 (Number of Category A Terminals).	1. Enter the correct responses. 2. Change your response to sequence number 163 to the same value as, or a value less than, your response to sequence number 112.
21[1]	You made an unacceptable change during the modify sequence (number 999).	Recheck the entries, and correct them.
22[1]	You specified something in your configuration that is not compatible with the character set you specified in sequence number 321. If you specified the EBCDIC character set (321=0), sequence number 121 must not be "02." If you specified the ASCII character set (321=1): Sequence number 121 must be "02" Sequence number 131 must be "1" Sequence numbers 132, 133, 134, and 135 must be "0" Sequence numbers 162, 163, 164, and 165 must be "0" Sequence number 166 must be "A"	Verify and enter the correct response(s).
23[1]	One or more of your responses are not compatible with the response to sequence number 331 (BSC or SDLC Protocol).	Verify and enter the correct responses.
24[1]	1. All your responses to sequence numbers 131 through 135 (keyboard types) and 0's (at least one must be 1), or 2. Your response to sequence number 113 (Extended Function Store) was something other than 0000 or A000. Your response indicates that the Extended Function Store feature is installed in your 3274 when, in fact, the feature is not installed.	1. Verify and enter the correct responses. 2. Verify and enter the correct response.
25[1]	1. If this response is to sequence number 133 (Data Entry Keypunch Layout Keyboard), you specified the Katakana language (121=17) and a Data Entry Keypunch Layout Keyboard (133=1). The Data Entry Keypunch Layout Keyboard cannot be specified with the Katakana language. 2. If this response is to sequence number 113 (Extended Function Store), the 3274 has less storage than indicated in your response to sequence number 113. 3. You specified a language other than 01 (U.S. English) to sequence number 121 and Text (135=1). Text cannot be specified with languages other than U.S. English.	1. Verify the enter the correct response. 2. Report the problem. 3. Verify and enter the correct response.
26[1]	You do not have enough storage to support all the features you have selected.	Report the problem and verify that the storage specified in response to sequence number 113 is correct. (The storage requirements for the features you have selected may have to be recalculated using the storage-requirement tables in Appendix I.)
27[1]	1. You specified the Portuguese language (121=18). This is not allowed with your configuration. 2. You specified SFAP (162=1) and a language that is not allowed with SFAP (121=02, 08, 10, 13, 20, 26, or 27). 3. You specified a language that is not allowed with a 3290 Display Terminal (121=02, 06, 08, 09, 10, 13, 20, 26, or 27).	1. Specify Portuguese (Alternate) (127=28). 2. Verify and enter the correct responses. 3. Verify and enter the correct response.

[1] If any entry is unacceptable, the entry for sequence number 900 is changed back to 0 (zero) and the unacceptable value is intensified.

Figure 6-4 (Part 1 of 2). Operator Codes during Backup Diskette Generation Only

Code	Meaning	Action
28[1]	Your responses to sequence numbers 113 (Extended Function Store) and 151 (3274 Model Designation) are incompatible.	Verify and enter the correct response.
29	You specified an Attribute Select keyboard (166=B or C), but your did not specify a Typewriter keyboard (131=1) or an APL keyboard (132=1).	Either change 166 to "A" or change 131 and/or 134 to "1."
30	1. You have specified a starting address for Multiple Interactive Screens (sequence number 171), but you have not specified logical terminal addresses. 2. You have specified logical terminal addresses for Multiple Interactive Screens (sequence number 171), but you have not specified a starting address.	Review instructions for defining Multiple Interactive Screens (Appendix J) and enter the correct response.
31	You have specified an invalid starting address for Multiple Interactive Screens (sequence number 171).	Specify a starting address that is not port A0, but is low enough to allow for your required number of terminals.
32	Your response to either sequence number 112 or 171 is incorrect. You have specified more logical terminals than your system will allow.	Review Appendix B, remembering that if using BSC or a 3274 Model D, you cannot specify more than 32 terminal addresses. If using SDLC or 3274 Model A, you cannot specify more than 128 terminal addresses.
33	Zero has been specified in sequence number 170, but you specified nonzero responses to sequence numbers 171, 173, 175, and 176.	Either specify 1 to sequence number 170, or zeros to sequence numbers 171, 173, 175, and 176.
34	You specified a Category B device in response to sequence number 111, but you specified a 3290 in sequence number 170. Category B devices are not allowed with 3290s.	Verify and enter the correct responses.
36	You have specified a nonzero response for sequence number 139, but a zero response for sequence number 170. 170 must be 1 for 139 to be nonzero.	Verify responses to sequence numbers 139 and 170, then enter the correct response(s).
99	Your entries are acceptable, but the entry for sequence number 900 or 901 has not been changed to a 1.	Change 900 or 901 entry to a 1.

[1] If any entry is unacceptable, the entry for sequence number 900 is changed back to 0 (zero) and the unacceptable value is intensified.

Figure 6-4 (Part 2 of 2). Operator Codes during Backup Diskette Generation Only

Steady Code	Diskette Mounted	Meaning	Action
0001	Feature	Customizing being performed	None.
0010	Any (indication lasts for 3 minutes or more)	Diskette improperly inserted or an internal 3274 error	Insert diskette properly and retry.
0011	Feature	Customizing being performed	None.
0100	Feature	Patch, printer authorization matrix, or RPQ being performed	None.
0101	Feature	Configuration being performed	None.
0110	Feature	Modification being performed	None.
0111	Feature, language, or RPQ	Normal 3274 operation	None.
1000	System (customizing in process)	Normal 3274 operation	None.
1001	Any	Internal 3274 error	Retry. If the error recurs, follow your local procedure for problem recovery.
1010	Any	Internal 3274 error	Retry. If the error recurs, follow your local procedure for problem recovery.
1101	Any (customizing procedure in progress)	1. IML button pressed while diskette is being changed, or 2. A bad or uncustomized system diskette is being used	1. Recustomize. Do not press the IML pushbutton unless instructed to do so. 2. Insert a good customized system diskette.
1111	System or load (IML not performed)	Customizing is completed	IML can be performed.

Figure 6-5. Steady 8 4 2 1 Indicator Codes during Backup Diskette Generation Only

Flashing Code[1]	Diskette Mounted	Meaning	Action
0000 0011	System	Load diskette request	Insert load diskette.
0000 0101	Any	System or load diskette request	Insert system or load diskette.
0000 1010	System	A diskette read error occured.	Retry. If the error recurs, follow your local procedure for problem recovery.
0000 1011	Any	System diskette request	Insert system diskette.
0000 1100	Any	RPQ diskette request	Insert RPQ diskette.
0000 1101	Any	Language diskette request	Insert language diskette.
0000 1110	Any	Feature diskette request	Insert feature diskette.
0100 0010	System	Configuration on system diskette being used for update-diskette procedure is not compatible with this 3274	Use a system diskette with a compatible configuration.
1000 0001	System	Uncustomized system diskette being used during update procedure	Use customized system diskette.
1001 0110	Any	Wrong level diskette being used	Use correct level diskette.
1111 0001	Feature	On/Off switch or TEST key pressed instead of ENTER	Retry. If the error recurs, follow your local procedure for problem recovery.
	System	Internal 3274 error	Follow your local procedure for problem recovery.
1111 0010	Feature	3278 Model 2 or higher is not attached to port A0.	Attach 3278 Model 2, its equivalent, or higher to port A0. Retry customizing.
1111 0011	Feature	Internal 3274 error	Follow your local procedure for problem recovery.
1111 0100	System	Internal 3274 error	Retry. If the error recurs, follow your local procedure for problem recovery.
1111 0101	System	Internal 3274 error	Retry. If the error recurs, follow your local procedure for problem recovery.
	Feature	On/Off switch or TEST key on the 3278 pressed instead of ENTER	
1111 0110	RPQ	Incompatible RPQs	Follow your local procedure for problem recovery.
	Feature	Internal 3274 error	
1111 0111	System	Internal 3274 error	Follow your local procedure for problem recovery.
1111 1000	System	Internal 3274 error	Follow your local procedure for problem recovery.
1111 1001	System	Internal 3274 error	Follow your local procedure for problem recovery.
1111 1010	Any	Internal 3274 error	Follow your local procedure for problem recovery.
1111 1011	System	Internal 3274 error	Follow your local procedure for problem recovery.
1111 1100	Any	Diskette drive error or a bad diskette	Retry. If the error recurs, follow your local procedure for problem recovery.
1111 1101	System or feature	Diskette drive error or a bad diskette	Retry. If the error recurs, follow your local procedure for problem recovery.
1111 1110	Any	Internal 3274 error	Retry. If the error recurs, follow your local procedure for problem recovery.

[1] These codes will flash alternately as shown, for example, 0000, 1011, 0000, 1011.

Figure 6-6. Flashing 8 4 2 1 Indicator Codes during Backup Diskette Generation Only

Steady Code	Flashing Code[1]	Diskette Mounted	Meaning	Action
–	0000 0101	System	Internal 3274 error or wrong response to sequence number 113 during customizing procedure	Check response to sequence number 113, and retry. If the error recurs, follow your local procedure for problem recovery.
–	0000 0110	System	Internal 3274 error or wrong response to sequence number 111, 112, 151, or 351 during customizing procedure	Check response to sequence number 111, 112, 151, or 351, and retry. If the error recurs, follow your local procedure for problem recovery.
–	0000 0111	System	1. Internal 3274 error, or 2. Wrong response to sequence number 311 or 343, or 3. The 3274 is not connected to the communication facility	1 and 2. Check responses to sequence numbers 311 and 343, and retry. 3. Connect the 3274 to the communication facility. If the error recurs, follow your local procedure for problem recovery.
–	0000 1000	System	Internal 3274 error or wrong response to sequence number 111 during customizing procedure	Check response to sequence number 111, and retry. If the error recurs, follow your local procedure for problem recovery.
1101	–	System	Uncustomized system diskette	Insert customized system diskette.
1110	–	System	Insufficient storage	Check response to sequence number 113, and retry. If the error recurs, follow your local procedure for problem recovery.

[1] These codes will flash alternately as shown, for example, 0000, 0101, 0000, 0101.

Note: *These indicators may be caused by something other than incorrect customizing. Further aids can be found in the* IBM 3270 Information Display System: 3274 Control Unit Problem Determination Guide, *GA27-2850.*

Figure 6-7. 8 4 2 1 Indicator Codes during IML That May Result from an Incorrect Backup Diskette Generation

Appendix A. Planning Checklist

This planning checklist is provided as a sample plan; the plan may have to be modified to accommodate your unique system/cluster configuration.

Weeks Before Delivery	Schedule Date	Responsibility		√	Event
		Customer	IBM		
16	———	X			Designate a person in your organization who will be responsible for all phases of the cluster installation.
		X	X		Review this planning guide with the person designated above.
		X			Decide who will install (1) the device cables between the 3274 and the attached units and (2) the power receptacles, wiring, etc. (your maintenance personnel or a contractor).
		X	X		Determine the schedule dates with the IBM representative. Fill in the dates on this form and give a copy to the IBM representative.
		X			Identify and schedule data communication needs. Identify the source for communication line (contact telephone company). Order modems as required.
14	———	X			Lay out the floor plan. Show locations of modems and cluster units.
		X			Order supples (refer to "Supplies" list).
		X	X		Review the overall installation plan with IBM representative.
		X			Place order for device cables (coaxial cables between 3274 and attached units) from IBM or a contractor, or order the materials to make the cables yourself. Refer to *Installation and Assembly of Coaxial Cable and Accessories for Attachment to IBM Products,* GA27-2805.
12	———	X			Determine whether changes are required to the existing programs (system control program, network control program, program products, and application programs). (Refer to *IBM 3274 Control Unit Description and Programmer's Guide,* GA23-0061). If so, schedule the required changes.
		X			Determine whether changes are required to the existing data processing units (host system computer, 2701, 2703, 3704, and 3705). If so, schedule the required changes.

Weeks Before Delivery	Schedule Date	Responsibility			Event
		Customer	IBM		
		X			Arrange for the installation of (1) the device cables between the 3274 and the attached units and (2) the power receptacles, wiring, etc.
		X			Define a training program for employees.
		X			Order the required terminal manuals.
10	———	X			Review the progress of the data communication plan. Identify and resolve any schedule conflicts.
9	———	X	X		Review the cluster configuration to make sure the configuration meets your requirements. Make any necessary changes to your order.
8	———	X	X		Review the installation plan to define any exposure to schedule.
		X	X		Confirm the arrival of package containing cluster cables.
		X			Start installing and labeling cluster cables and power receptacles.
6	———	X			Start employee training.
			X		IBM representative checks progress of site preparation.
4	———	X			Receive supplies (magnetic stripe cards, forms, etc.).
		X			Complete the installation of cables and power receptacles.
2	———	X			Complete the checkout of the cables and power: continuity and polarity tests of cluster cables, power receptacles, and safety considerations.
		X			Complete the required changes to the existing programs and data processing units.
		X			Complete the site preparation.
		X			Install communication facilities (telephone line and modems).
		X			Make sure all the necessary information is available for the setup personnel (switch settings, configuration information, customizing form, etc.).
		X			Review setup instructions with the setup personnel.

| Weeks Before Delivery | Schedule Date | Responsibility | | √ | Event |
		Customer	IBM		
Arrival of Units	————	X			Move the units to locations. Unpack per unpacking instructions.
		X			Read the setup instructions.
		X			Complete the setup of 3274 C models and attached terminals, using the setup instructions included in the shipping cartons.
			X		Install 3274 A, B, and D models.
		X			Complete the 3274 customizing.

Appendix B. 3274 Device Cables

In order to assign the device cables to the correct 3274 ports, you should be aware of the following:

- Two categories of units can be attached to the 3274:

  - Category A—3178s, 3230s, 3262s, 3268s, 3278s, 3279s, 3287s with a 3274 Attachment feature, 3289s, 3290s, and 5210s.

  - Category B—3277s, 3284, 3286s, 3287s with a 3271/3272 Attachment feature, and 3288s.

  Category A units must be attached to a 3274 Type A Terminal Adapter; Category B units, to a 3274 Type B Terminal Adapter.

- Eight Category A units can be attached to the basic 3274. Type A Terminal Adapters and Type B Terminal Adapters can be ordered in various combinations to provide a maximum cluster of (a) 32 Category A units or (b) 32 Category A and Category B units, of which a maximum of 16 can be Category B units on all models except the Model 51C. The 3274 Model 51C can have a maximum of 8 Category A units and 4 Category B units. For detailed information concerning 3274 terminal adapter feature combinations, refer to *IBM 3270 Information Display System: Feature Description,* GA23-0113.

- Depending upon the configuration of the 3274 and its attached units, a maximum of five device cable connector panels can be installed on the 3274 (see 3274 Device Cable Attachment Form). Each panel used to attach Category A units contains eight ports for attachment of device cables; each panel used to attach Category B units contains either four or eight active ports. Therefore, on all models except the Model 51C, a maximum of 40 ports can be present. However, only 32 of the possible 40 ports can be used.

- There are two types of 3274 device cable connector panels:

  - Black panels, labeled *A,* which are used to attach device cables from units that attach to a Type A Terminal Adapter.

  - White panels, labeled *B,* which are used to attach device cables from units that attach to a Type B Terminal Adapter.

  The lowermost panel on all models, except the Model 51C, and the second and third lower panels, if present, are *always* black, are labeled *A,* have ports numbered 0 through 23 (A0—A23), and are used to attach only Category A units.

- On all models except the Model 51C, the fourth panel from the bottom (if present) has a dual function. It can be used to attach either Category A units or Category B units. This panel can be used for one or the other category of machines, *but not both categories.* When this panel is used to attach Category A units, the panel is black, is labeled *A,* and has ports numbered 24 through 31 (A24—A31); when this panel is used to attach Category B units, the panel is white, is labeled *B,* and has ports numbered 8 through 15 (B8—B15).

- On all models except the Model 51C, the fifth (uppermost, if present) panel is *always* white, is labeled *B*, has ports numbered 0 through 7 (B0—B7), and is used to attach only Category B units.

- Port A0 must always be assigned to a 3178, 3278, or 3279 with a keyboard.

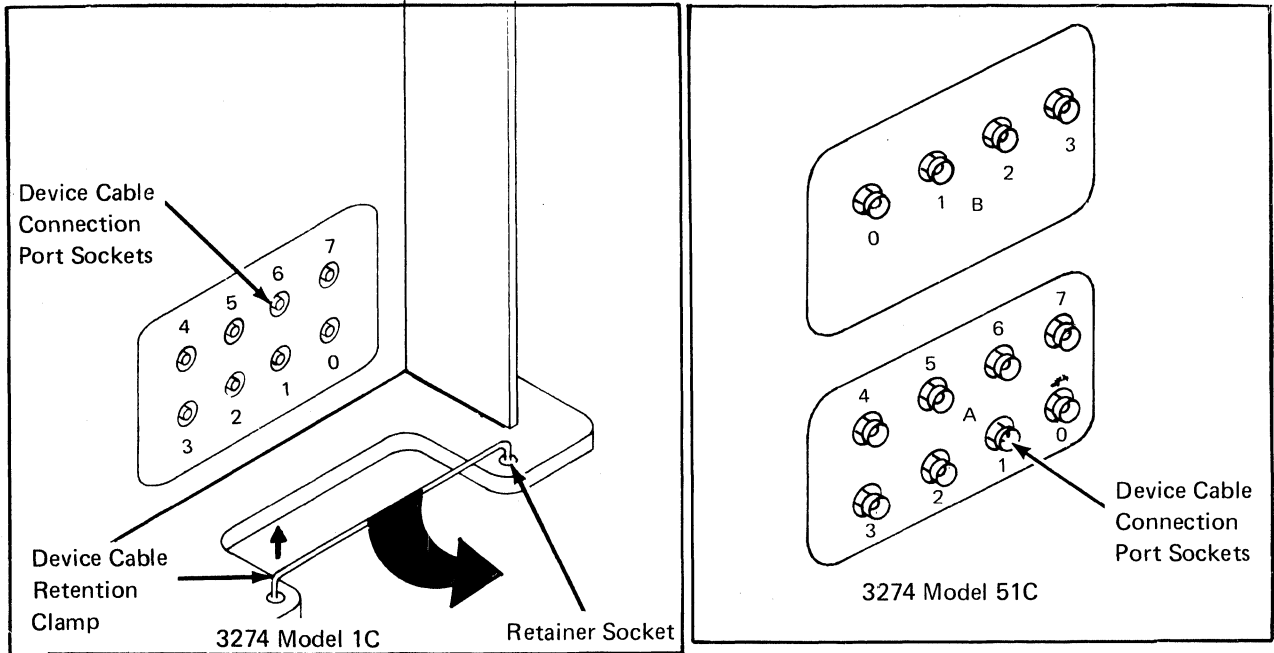## Instructions for Completing the 3274 Device Cable Attachment Form

1. Determine how many units are in each of the following two categories:

   a. 3178s, 3230s, 3262s, 3268s, 3278s, 3279s, 3287s with a 3274 Attachment feature, 3289s, 3290s, and 5210s.

   b. 3277s, 3284s, 3286s, 3287s with a 3271/3272 Attachment feature, and 3288s.

2. Assign a 3178, 3278, or 3279 with a keyboard to port A0, and fill in the unit location (office/column number) and telephone number columns of the table. It is recommended that this 3178, 3278, or 3279 be as close as possible to the 3274, because it will be used for 3274 customizing and problem determination.

3. Assign the remaining Category A units to the ports numbered A1 through A31 sequentially (bottom of table to top). Fill in the table with the required information for each unit. If any of the ports numbered A24 through A31 (A11 for 51C) are used, cross out the B port number(s) to the right of the A port number(s) used.

4. If there are no Category B units in the configuration, go to step 6.

5. Assign the Category B units to the ports numbered B0 through B15 (B07 for 51C), starting at port B0 and progressing sequentially (top of table to bottom). Fill in the required information in the table for each unit. If any of the ports numbered B8 through B15 are used, cross out the A port number(s) to the left of the B port number(s) used.

6. Cross out all unused port entries in the table.

7. Write the 3274 location information (office/column number) above the table.

It is recommended that copies of the completed form be given to the personnel who will install and mark the cables and to the personnel who will connect the cables to the 3274. In addition, a copy of the form should be stored in the pocket inside the 3274 customer access door.

3274 Device Cable Attachment Procedure

Note: *If you have a Model 51C, go directly to Step 3.*

1   **DO**   Open the customer access door.

2   **DO**   Unlatch the device cable retention clamp by lifting up on the left side of the clamp and rotating it toward the front of the 3274.

Device Cable Connection Port Sockets

Device Cable Retention Clamp

Retainer Socket

3274 Model 1C

Device Cable Connection Port Sockets

3274 Model 51C

3   **DO**   Use the 3274 Device Cable Attachment Form on the back of this page to connect the device cables to their corresponding ports on the device cable panel(s).

      DO   Use a push-and-twist clockwise motion to connect and lock the device cables to the port sockets.
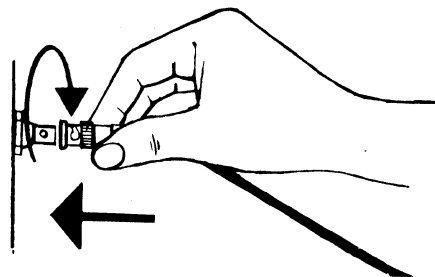
Caution: Do not connect or disconnect device cables during an electrical storm.

4   **DO**   Rotate the device cable retention clamp toward the rear of the 3274 (clockwise), and latch the clamp in place by inserting the loose end firmly in the retainer socket. Be sure all the device cables are behind the retention clamp.

5   **DO**   Close the customer access door.

3274 Device Cable Attachment Form (Models 1A, 1B, 1C, 1D, 21A, 21B, 21C, 21D, 31A, 31C, and 31D)

DO Use this form to connect the device cables to the 3274 ports.

1. Connect the device cables identified for the A panel and port numbers (A0, A1, A2, and so on) to the corresponding ports on the black connector panels. Connect the cables in numeric order from the bottom of the table to the top.

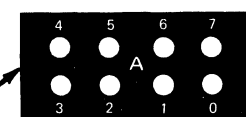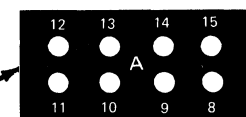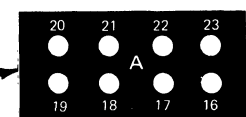2. Connect the device cables identified for the B panel and port numbers (B0, B1, B2, and so on) to the corresponding ports on the white connector panels. Connect the cables, starting with the largest (used) port number in the B portion of the table, in reverse numeric order (B15, B14, B13, and so on) from the bottom of the table to the top. Use the chart on the back of this sheet to fill in information.

Control Panel
Customer Access Door

3274 Panel and Port Number	Network Address	Cable Identification	Unit Type	Unit Location	Telephone Nearest the Unit
B0					
B1					
B2					
B3					
B4					
B5					
B6					
B7					
A31 or B8					
A30 or B9					
A29 or B10					
A28 or B11					
A27 or B12					
A26 or B13					
A25 or B14					
A24 or B15					
A23					
A22					
A21					
A20					
A19					
A18					
A17					
A16					
A15					
A14					
A13					
A12					
A11					
A10					
A9					
A8					
A7					
A6					
A5					
A4					
A3					
A2					
A1					
A0			3178, 3278, or 3279		

Note: *Maximum of 32 devices*

3274 Panel and Port Number	Network Address	Cable Identification	Unit Type	Unit Location	Telephone Nearest the Unit
B0 B1 B2 B3					
B4 B5 B6 B7					
A31 or B8 A30 or B9 A29 or B10 A28 or B11					
A27 or B12 A26 or B13 A25 or B14 A24 or B15					
A23 A22 A21 A20					
A19 A18 A17 A16					
A15 A14 A13 A12					
A11 A10 A9 A8					
A7 A6 A5 A4					
A3 A2 A1 A0			3178, 3278, or 3279		

Note: *Maximum of 32 devices*

3274 Device Cable Attachment Form (Model 51C)

DO   Use this form to connect the device cables to the 3274 ports.

1. Connect the device cables identified for the A panel and port numbers (A0, A1, A2, and so on) to the corresponding ports on the connector panels. Connect the cables in numeric order from the bottom of the table to the top.

2. Connect the device cables identified for the B panel and port numbers (B0, B1, B2, and so on) to the corresponding ports on the connector panels. Connect the cables, starting with the largest (used) port number in the B portion of the table.

3274 Panel and Port Number	Network Address	Cable Identification	Unit Type	Unit Location	Telephone Nearest the Unit
B0 B1 B2 B3					
A7 A6 A5 A4					
A3 A2 A1 A0			3178, 3278, or 3279		

Note: *Maximum of 12 devices.*

B Ports

A Ports
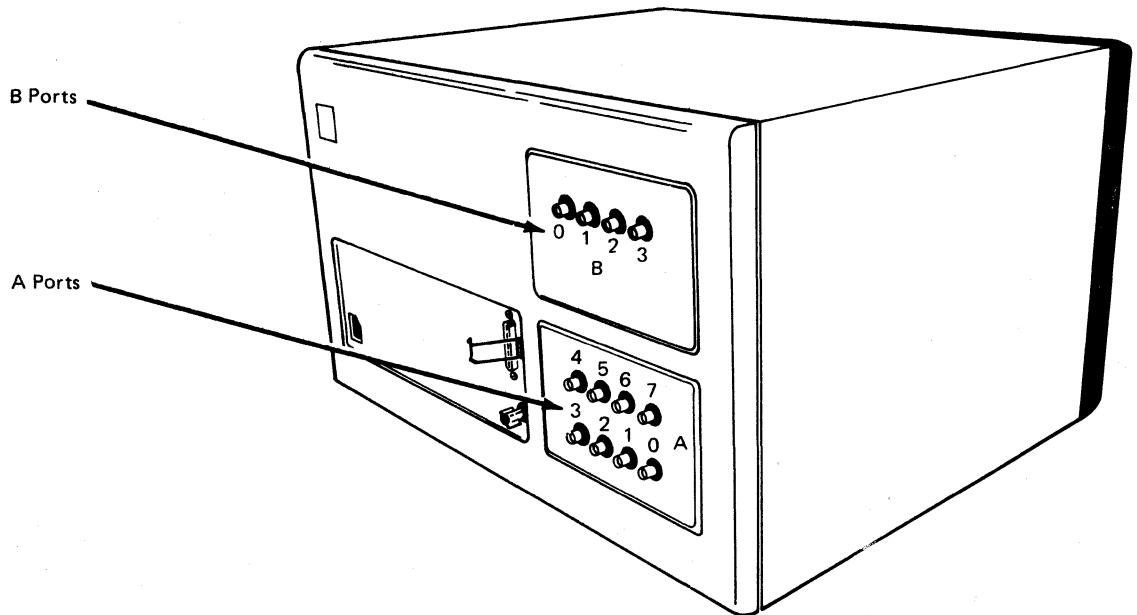
Channel Attachment Information Form (3274 Models 1A, 1B, 1D, 21A, 21B, 21D, 31A, and 31D)

This form should be completed before delivery of your 3274 (Models 1A, 1B, 1D, 21A, 21B, 21D, 31A, and 31D). The IBM service representative will require the information to connect your 3274 properly to the local channel.

Control unit address (in hexadecimal) _____

Number of contiguous addresses needed
(Models B and D only) _____

Type of channel (byte multiplexer, block
multiplier, or selector) _____

Mode (byte or burst) _____

High or low channel priority _____

Channel data rate
(Models 1A, 21A, and 31A only)   100-kilobyte _____
See *IBM 3270 Information*   20-kilobyte _____
*Display System: 3274 Control
Unit Description and Program-
mer's Guide,* GA23-0061.

Ensure that the correct power receptacle is available.

Appendix C. Printer Authorization Matrix

Description

The 3274 printer authorization matrix is required for local-copy operations. Local copy between Category A terminals can be either host-initiated or Print-key-initiated. Local copy between Category B terminals must be host-initiated. Local-copy operations cannot be performed between Category A and Category B terminals.

* Establish Printer Mode. A printer may be reserved for the exclusive use of either the host or the local-copy function. A third mode allows a sharing between these two functions.

* Assign Print "Classes." A print "Class" is a way of grouping printers for use by local copy. A local-copy request directed to a class is then serviced by one of the printers assigned to that group.

* Define Source Device Lists. The source device list specifies which displays may use any given printer for local copy. Note that all displays for a printer must be attached to the same adapter type as the printer. For example, a Category A printer can have only Category A displays in its source device list.

Printer Modes

A printer may be in one of three modes, specified in the printer authorization matrix as local, system, or shared mode. Each printer on the 3274 defaults to system mode until a matrix is loaded. Printers that are specified as being in shared or local mode then become available for local copy use.

Local Mode: A printer in local mode may be used for local-copy functions regardless of host attachment or communication protocol. This means that displays within the cluster may contend for the use of printers but the host may not. The printer is not available for direct print operations from the host.

A local-copy operation involves the transfer of data from the display buffer to the printer buffer and the subsequent printing of that data. A local copy may be initiated by an operator using the Print key on a 3178, 3278, 3279, or 3290 attached to a 3274 or by the host when the display is operating in SNA/SDLC.

System Mode: A printer in system mode is entirely under host (system) control. This is the default mode each printer assumes when no matrix has been defined. The printer cannot be used for operator-initiated local-copy requests; nor is it available for host-initiated copy operations when using SNA/SDLC. However, when operating with BSC discipline, the printer may honor a BSC Copy command when it is in system mode. The BSC Copy command, directed to the *to* device, specifies the *from* device as a command parameter and does not use the printer authorization matrix.

Shared Mode: In shared mode, both host-directed printing operations and local-copy operations are permitted on the same printer. When in system mode, the printer is protected from local copies; in local mode, the printer is protected from host-initiated operations. In shared mode, however, the subsystem does not

guarantee this type of integrity. When using a printer in shared mode, the user must assume responsibility for the integrity of his printed data by "installation rules" and proper programming practices.

In SNA/SDLC, a printer designated as being in shared mode in the printer authorization matrix may be used for local copy under the following conditions:

- When the printer is not in session with a primary logical unit (PLU) in the host

- When Between Bracket Printer Sharing (sequence number 213) has been specified in the customizing procedure and the printer is not in bracket state with the PLU in the host

The printer authorization matrix is required to perform local-copy operations. If the matrix is not loaded, the default condition for the cluster is that all printers are in system mode, and local-copy operations are not possible except with the BSC Copy command.

Printer Class Structure

The printer authorization matrix permits the assignment of a printer to a class. By the selection of a class containing multiple printers, improved copy throughput can be obtained. The definition of a class of printers is made by the customer and may be based on type, character subset, type of forms mounted, location, and so forth. For example, in a particular installation class, "72" may have been defined as referring to all printers with yellow paper. Thus, an operator may select an authorized printer on the basis of this characteristic rather than by address.

The printer authorization matrix allows a maximum of 16 printer classes to be defined in each subsystem. A display operator may select a printer by class by using the IDENT key (ALT key pressed) and keying in a number ranging from 70 through 85 corresponding with one of 16 classes. In any configuration, a single printer may be in one or several classes, or not in a class. Several printers may be members of a single class.

Source Device Lists

Each printer may be restricted as to which displays it may accept local copies from. Any given printer may be permitted to process copies from some, all, or none of the displays on the control unit. When a local copy is directed to a print class, the printer selected will be one that is authorized to accept copies from the requesting display. Not all printers assigned to a particular class may be authorized for the same subset of display terminals.

Matrix Structure

The 3274 printer authorization matrix defines how display stations (source devices) can use printers (destination devices) attached to the same control unit for the purpose of accepting a local-copy request.

The printer authorization matrix is structured as a two-dimensional array, with each printer in the cluster represented by a printer port address with the following format:

Printer Port Address	Mode	Class	Source Device List

Printer port address is the first field of the descriptor. A decimal address from 01 to 31 for all models except Model 51C (01 to 07 for Model 51C) allows all printers to be attached to any port on the control unit, except port 0. Addresses are sequential by adapter.

Mode defines the printer to be in system, local, or shared mode, where:

0 = System

1 = Local

2 = Shared

Class permits the grouping of printers into classes. This field is bit-coded, one bit for every 16 classes, so that a single printer may be in more than one class. Valid classes are designated 70 through 85 inclusive. Coding a 1 under the appropriate class permits the printer to accept copies from display stations selected by that class.

Source Device List is a bit-coded field that specifies which displays (D) are authorized and configured to use the printer (P) associated with this device descriptor. Each bit position is associated with a port number on the cluster. Coding a 1 under a given display station port address permits the printer to service copy requests from that display station.

Consider an example in which ports 0 through 11 of a 3274 Control Unit have terminals attached as follows:

Port Number	0	1	2	3	4	5	6	7	8	9	10	11
Terminal	D	D	P	P	D	D	P	P	D	D	D	D

The printer authorization matrix describing this configuration is shown in Figure C-1. In this example, the display at port 0 may copy only to the printer on port 2. This printer is not addressable by class (class = all zeros).

The displays on ports 1 and 4 may copy to either the printer on port 3 or the printer on port 6; the displays on ports 8 and 9 may copy only to the printer on port 6. The printer on port 3 may also be used by the host. If selected by address, the addressed printer is logically connected to the display for local-copy operations. If selected by class, all printers in the class are logically connected to the display for local-copy operations. In a class environment, printers in the class are selected by the control unit on a most-available basis.

| Printer | | | | Source Device List | | | | | | | | | | | | | |
Attached to Port with Address	Mode	Class 70 71 72 73 - - 85		Port No. 0 1 2 3 Terminal: D D P P				4 5 6 7 D D P P				8 9 10 11 D D D D				. . . . . . 31 D
02	Local (1)	0 0 0 0 - - 0		1	0	X	X	0	0	X	X	0	0	0	0	0
03	Shared (2)	0 1 0 0 - - 0		0	1	X	X	1	0	X	X	0	0	0	0	0
06	Local (1)	0 1 0 0 - - 0		0	1	X	X	1	0	X	X	1	1	0	0	0
07	System (0)	0 0 0 0 - - 0		0	0	X	X	0	0	X	X	0	0	0	0	0

X = Reserved, set to 0   D = Display   P = Printer

Figure C-1. Example of a Printer Authorization Matrix

The display at port 5 is not authorized to use a printer as a local-copy device. Also, the printer at port 7 is in system mode and therefore reserved for exclusive use by the system. It is not available to any displays for local-copy operations, even if these displays are authorized in the source device list.

It is important to note that source devices are associated with destination devices, not with classes. Thus several printers may be defined to be in class 75, but a particular display may be authorized only for some subset, or even none of the printers in that class. When class identification is displayed in the operator information area of the display, copying is performed only to authorized printers in that class.

Defining the Printer Authorization Matrix during Customizing

Figure C-2 shows how the printer authorization matrix is filled out to define the matrix shown in Figure C-1. In "Sequence A," the port addresses are shown in numeric sequence; however, this is not a requirement. The entries may be entered as shown in "Sequence B," that is, in no particular sequence and not in consecutive groups. The following description refers only to "Sequence A." The example of a worksheet in Figure C-3 shows how the numeric entries of Figure C-2 are derived. To fill out the worksheet for the printer attached to port with address 02 (Figure C-1), AA = 02. This printer is to operate in local mode, so m = 1. These numbers will later be transferred to the Printer Authorization Matrix Form. Figure C-4 shows a sample printer authorization matrix worksheet for 3274 Models 1, 21, and 31. Figure C-5 shows a sample printer authorization matrix worksheet for a Model 51C. Note that when specifying a printer authorization matrix for a Model 51C, although 31 possible entries are displayed, only seven can be specified.

The X and Y entries are completed in two steps. In step 1, the binary values of X and Y are entered on the worksheet for the class and the source device list, respectively. In step 2, the binary values are converted to hexadecimal notation. The hexadecimal notations are later transferred to the Printer Authorization Matrix Form.

To continue with Figure C-1, no class (70 through 85) is defined for the printer attached to port 02, so XXXX = hex 0000. The source device list in Figure C-1 indicates (by a 1) that the display terminal attached to port 0 can copy to this printer. Therefore, a 1 is entered in the 0 column of the first Y (Figure C-3). No other displays can copy to this printer, so 0's (zeros) are entered in all remaining columns under the Ys. The binary 1000 under the first Y on the worksheet is converted to hex 8. Because all other X and Y entries are binary 0's, all remaining hex entries are 0's.

Printer Authorization Matrix Form

In response to sequence number 022, enter the characters (below) supplied by the planner in the appropriate groups on your display screen. If a group already is displayed as AA M XXXX YYYY YYYY, your entry will overwrite these characters. When you have completed all your entries, move the cursor to the zero after sequence number 901 at the bottom of the screen, change it to a 1, and press ENTER. Any entry that is not valid will be intensified at this time and the 1 you entered will change back to a 0 (zero). Correct the invalid entry, and return to 901. Again, change the zero to a 1, and press ENTER. When all entries are valid, the printer authorization matrix display will be replaced by the next customizing sequence number. (If, at any time during this procedure, you wish to cancel any entries you have just made, change the 0 (zero) after the 901 to A and press ENTER.) Return to your original instructions.

To delete an entry, move the cursor (with cursor-move keys or tab key) to the leftmost position of the entry (the Printer Port Address) and press the spacebar twice. The entire matrix, or as many entries as desired, can be deleted in this manner. After all changes have been made, press ENTER. All deleted entries will be displayed as AA M XXXX YYYY YYYY. When the matrix is satisfactorily defined, move the cursor to the zero after sequence number 901, change it to a 1, and press ENTER.

	Printer Port Address		Printer Mode	Printer Class Assignment								Source Device List			
	A	A	M	X	X	X	X	Y	Y	Y	Y	Y	Y	Y	Y
1)	0	2	1	0	0	0	0	8	0	0	0	0	0	0	0
2)	0	3	2	4	0	0	0	4	8	0	0	0	0	0	0
3)	0	6	1	4	0	0	0	4	8	C	0	0	0	0	0
4)	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0
5)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
7)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
8)	0	3	2	4	0	0	0	4	8	0	0	0	0	0	0
9)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10)	0	6	1	4	0	0	0	4	8	C	0	0	0	0	0
11)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
13)	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0
14)	0	2	1	0	0	0	0	8	0	0	0	0	0	0	0
15)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
16)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Sequence A: rows 1) – 4)
Sequence B: rows 8) – 14)

Figure C-2. Example of a Completed Printer Authorization Matrix Form

Printer Port Address	Mode	Class				Source Device List							
A A	M	X	X	X	X	Y	Y	Y	Y	Y	Y	Y	Y
Class Number →		70 71 72 73	74 75 76 77	78 79 80 81	82 83 84 85	0 1 2 3	4 5 6 7	8 9 10 11	12 13 14 15	16 17 18 19	20 21 22 23	24 25 26 27	28 29 30 31
0 2	1	0	0	0	0	8	0	0	0	0	0	0	0
		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	1 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
0 3	2	4	0	0	0	4	8	0	0	0	0	0	0
		0 1 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 1 0 0	1 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
0 6	1	4	0	0	0	4	8	C	0	0	0	0	0
		0 1 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 1 0 0	1 0 0 0	1 1 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
0 7	0	0	0	0	0	0	0	0	0	0	0	0	0
		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
— —	—	—	—	—	—	—	—	—	—	—	—	—	—

Port Number
Hexadecimal Notation
Binary Value

Figure C-3. Example of a Printer Authorization Matrix Worksheet (Models 1A, 1B, 1C, 1D, 21A, 21B, 21C, 21D, 31A, 31C, and 31D)

Printer Port Address	Mode	Class				Source Device List							
A A	M	X 70 71 72 73	X 74 75 76 77	X 78 79 80 81	X 82 83 84 85	Y 0 1 2 3	Y 4 5 6 7	Y 8 9 10 11	Y 12 13 14 15	Y 16 17 18 19	Y 20 21 22 23	Y 24 25 26 27	Y 28 29 30 31
— —	—	—	—	—	—	—	—	—	—	—	—	—	—
— —	—	—	—	—	—	—	—	—	—	—	—	—	—
— —	—	—	—	—	—	—	—	—	—	—	—	—	—
— —	—	—	—	—	—	—	—	—	—	—	—	—	—
— —	—	—	—	—	—	—	—	—	—	—	—	—	—
— —	—	—	—	—	—	—	—	—	—	—	—	—	—
— —	—	—	—	—	—	—	—	—	—	—	—	—	—
— —	—	—	—	—	—	—	—	—	—	—	—	—	—
— —	—	—	—	—	—	—	—	—	—	—	—	—	—
— —	—	—	—	—	—	—	—	—	—	—	—	—	—

Enter this row on the Printer Authorization Matrix Form

Figure C-4. Sample Printer Authorization Matrix Worksheet (Models 1A, 1B, 1C, 1D, 21A, 21B, 21C, 21D, 31A, 31C, and 31D)

Printer Port Address	Mode	Class				Source Device List	
A A	M	X 70 71 72 73	X 74 75 76 77	X 78 79 80 81	X 82 83 84 85	Y 0 1 2 3	Y 4 5 6 7
— —	—	—	—	—	—	—	—
— —	—	—	—	—	—	—	—
— —	—	—	—	—	—	—	—
— —	—	—	—	—	—	—	—
— —	—	—	—	—	—	—	—
— —	—	—	—	—	—	—	—
— —	—	—	—	—	—	—	—
— —	—	—	—	—	—	—	—
— —	—	—	—	—	—	—	—
— —	—	—	—	—	—	—	—

Enter this row on the Printer Authorization Matrix Form

Figure C-5. Sample Printer Authorization Matrix Worksheet (Model 51C)

Appendix D. Subsystem Verification Procedure

The procedure in this appendix is intended as a means of verifying that the 3274 Control Unit can communicate with all its attached terminals (display stations and printers). It should be given to, and performed by, the person responsible for customizing the 3274.

This procedure can be performed only after the 3274 Control Unit has been successfully customized and an IML performed. Its purpose is to verify that the 3274 can communicate with all its attached terminals.

1. Ensure that all attached terminals and the 3274 are powered on.

2. Press the IML pushbutton. Various 8 4 2 1 patterns will appear. When IML is completed, all 8 4 2 1 indicators will be off.

3. While holding the ALT key down on the 3178 or 3278 Display Station or on the 3279 Color Display Station, press and release the TEST key and then release the ALT key.

   The word TEST will appear on the bottom left of the display screen.

4. Enter /3, and press ENTER.

   The first two lines of your display screen should resemble those shown in the diagram below. The actual format may vary, depending on how you replied to sequence numbers 111 and 112 in the customizing procedure.

```
  0123456789012345    67890123
  1110111111111111    1-111111




  _____
  TEST
```
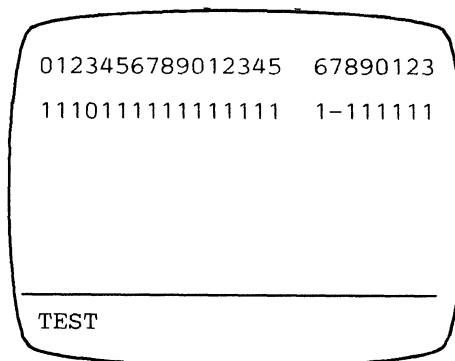
The first line represents the terminals configured for your 3274. Starting from the left, the 0 through 9 represent the Category A terminals attached to ports A0 through A9 on the 3274. The next characters (0 through 5) represent the Category A terminals attached to ports A10 through A15. The blank indicates that there are no more Category A terminals. (The actual number of Category A terminals shown will equal your response to sequence number 112.) The remaining characters on the first line (6 through 3) represent the Category B terminals attached to ports B0 through B7 on the 3274. (The actual number of Category B terminals shown will equal your response to sequence number 111.)

The second line represents the status of each terminal on line 1. A 1 indicates that the terminal is powered on and communicating with the 3274. A 0 indicates that the port represented is not communicating with a terminal; this is the case with the terminal attached to port A3 in the diagram. This could be caused by the following:
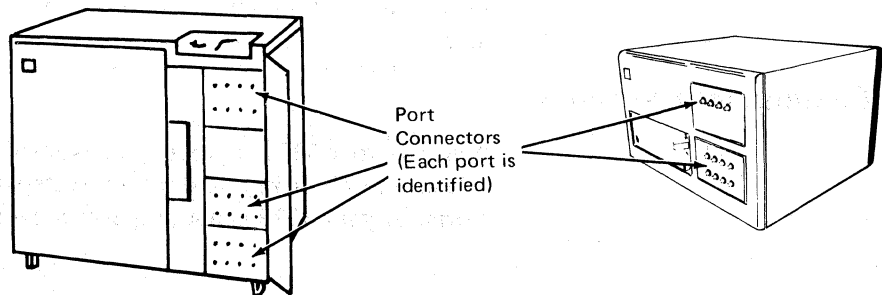
- The terminal connected to that port is powered off.

- No terminal is connected to that port.

- A problem exists within the terminal connected to that port.

When a 0 status is indicated, you should:

- Verify that a terminal is connected to the port. Do this by checking the port connectors on the 3274 (as shown in the following diagram) to see whether a wire is connected to the port.

3274 Models 1, 21, and 31   3274 Model 51C

Port Connectors (Each port is identified)

- If a coaxial cable is not connected, the 0 is not a problem indication.

- If there is a coaxial cable connected, the terminal either is powered off, is not connected to the other end of the coaxial cable, or is not working properly. Follow your local procedures to correct the problem.

A — indicates that the 3274 was communicating with the terminal, but no longer is, because of a problem within the terminal. Follow your local procedures to correct the problem.

Any other lines should be ignored. They contain information used by the IBM service representative for problem diagnosis.

5. To end this procedure: While holding the ALT key down on the 3178, 3278, or 3279 display station, press and release the TEST key and then release the ALT key.

The word TEST will disappear from the bottom left of the display screen, and the screen will be cleared. If you are using a 3274 Model 31C or 51C and have been given instructions for setting the Model 31C or 51C switches, follow those instructions. Otherwise, proceed with your usual work.

Appendix E. Color Convergence Procedure

The procedure in this appendix describes how to adjust the color convergence on a 3279 Color Display Station during 3274 customizing. It should be given to the person responsible for customizing the 3274.

Operator Instructions

When a 3274 is customized with a 3279 Color Display Station, a pattern similar to those shown in Figure E-1 will appear on the display screen after step 3 of the Initial Customizing Procedure Form is performed. The pattern allows you to adjust the convergence of the 3279 if needed. (*Convergence* means superimposing one set of lines on another so that only one set of lines is visible.) Allow a 10-minute warm-up period after the 3279 is switched on before deciding whether convergence is needed.

Figure E-1 shows examples of unconverged and converged display screens. An unconverged pattern will be multicolor; a converged pattern will appear as white lines. Take care when converging your 3279, because improper convergence will make it difficult to tell the colors of characters on the outer edges of the display screen.

Convergence Procedure

Note: If your 3279 is properly converged, hold down the ALT key, press and release the TEST key, and return to step 4 of the Initial Customizing Procedure Form. If your 3279 is not properly converged, perform the following procedure.

1. Be sure that the center switch to the right of the display screen is in the lower (• •) position.

2. Press the spacebar. A pattern will appear in the center of the display screen.

3. Use the cursor movement keys (<- , -> , | , and |) to move one set of lines until they converge with the other (color becomes yellow). The movement of the lines is very slight and may not be perceptible at first.

4. Press the spacebar again. A different color pattern will appear in the center of the screen.

5. Use the cursor movement keys to converge this pattern (color becomes pink).

6. Press the R key. The pattern from step 2 will again appear in the center of the screen. Reconverge this pattern if necessary.

7. Press the spacebar twice. The pattern will appear on a different location of the display screen.

8. Use the cursor movement keys to converge the pattern.

9. Press the spacebar again. A different color pattern will appear in the same location.

10. Use the cursor movement keys to converge the pattern.

11. Press the R key. The pattern from step 6 will again appear on the display screen. Reconverge this pattern if necessary.

12. Repeat steps 7 through 11 (12 times) until all patterns appear on the display screen at one time (as shown in Figure E-1).

13. When all patterns are on the display screen at the same time, check to see that they are all converged properly. If any are not, repeat this procedure, starting at step 2.

14. When all patterns are converged properly, hold down the ALT key, press and release the TEST key, and return to step 4 of the Initial Customizing Procedure Form.

Error Conditions

The following error indications may appear in the operator information area during the convergence procedure:

Indicator	Symptom	Action
228	Unable to converge pattern fully.	Change the battery.
229	Area of display screen above operator information area is all green.	Report the problem.
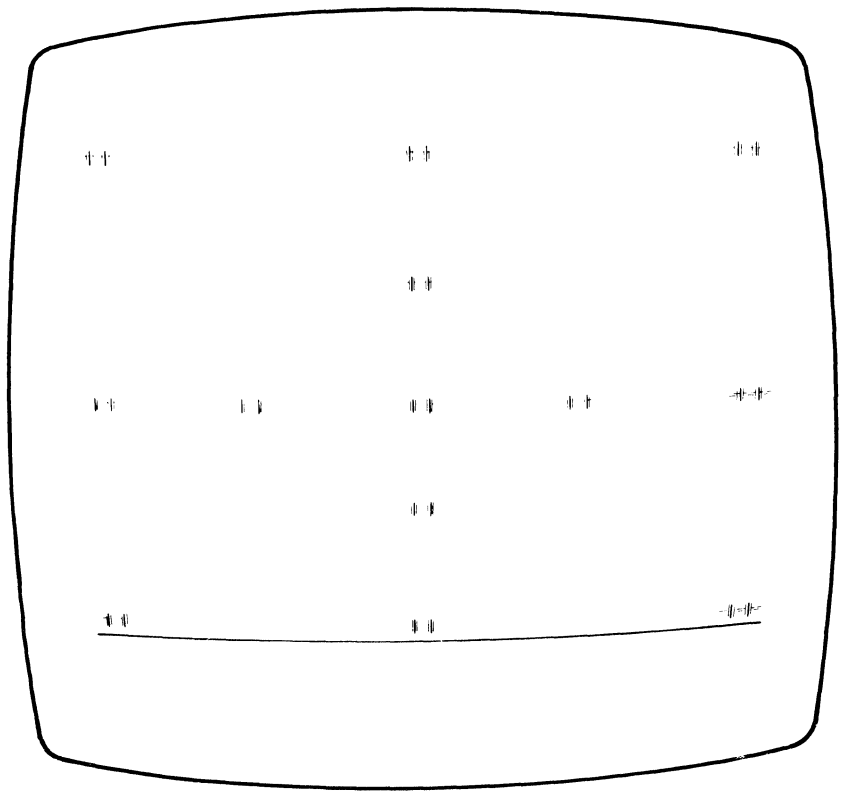
Unconverged
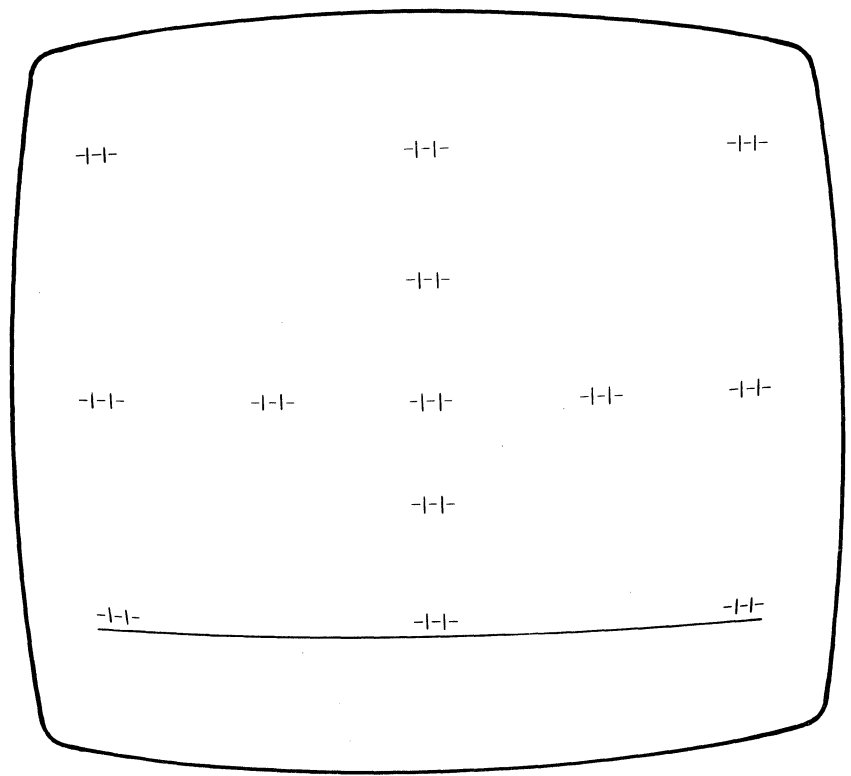
Converged

Figure E-1. Examples of Unconverged and Converged Display Screens

Appendix F. 3274 Communication Cables

This appendix shows the various communication cable configurations and adapters for the 3274 Control Unit. It is organized as follows:

- External Modem Cables

- Loop Adapter Cable

- X.21 Cable

- Digital Data Service Adapter Cable

- Integrated Modem Cables

- CCITT V.35 Interface Cable

External Modem Cables

3274 Model 51C with an External Modem Attached to a
Switched Line or Models 1C, 21C, 31C, and 51C Attached to a
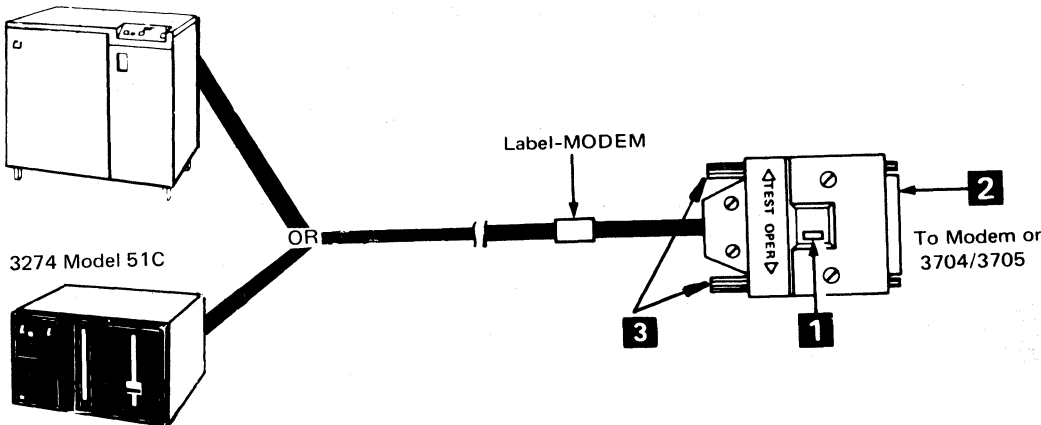*Nonswitched Line (All Countries except United Kingdom*
Datel Modem)

You have received either a single or a dual (two cable sections joined by a connector) communication cable with your 3274. Follow the instructions that apply to the cable you received.

Single Cable

3274 Models 1C, 21C, and 31C

3274 Model 51C

Label-MODEM

To Modem or 3704/3705

☐ Set the TEST/OPER switch **1** to the OPER position. If you are in Japan, read the note on this page first; then continue with "Thumbscrew Replacement Instructions."

☐ Connect the cable plug **2** to the modem or to the 3704/3705 Line Set 1F Interface Cable connector (for direct attachment to a 3704/3705). Tighten the thumbscrews **3** of the cable plug securely with your fingers.

Note (If you are in Japan): *The black thumbscrews on the communication cable shipped to you are made with metric threads and are attachable to NTT modems or their equivalents. If your modem is an IBM 3872 or 3874, or any other modem using an English-unit connector, the black thumbscrews must be replaced with the gold thumbscrews (made with English threads) provided in the customer envelope.*

Thumbscrew Replacement Instructions:

☐ Remove the black thumbscrews **A** by pulling them in the direction of the arrows. (Do not be afraid to apply necessary force)
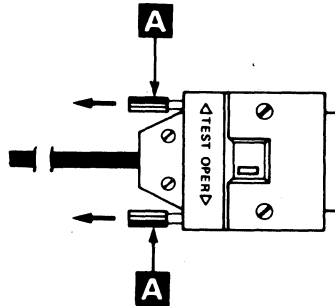
☐ Insert the gold thumbscrews provided in the customer envelope by pushing them in the reverse direction of the arrows until the end of each thumbscrew appears outside the hood.

Note: *You should keep the removed thumbscrews in the customer envelope for later use; the modem may be changed or the terminal may be relocated.*

Dual Cable

3274 Models 1C, 21C, and 31C

3274 Model 51C

To External Modem
or
3704/3705
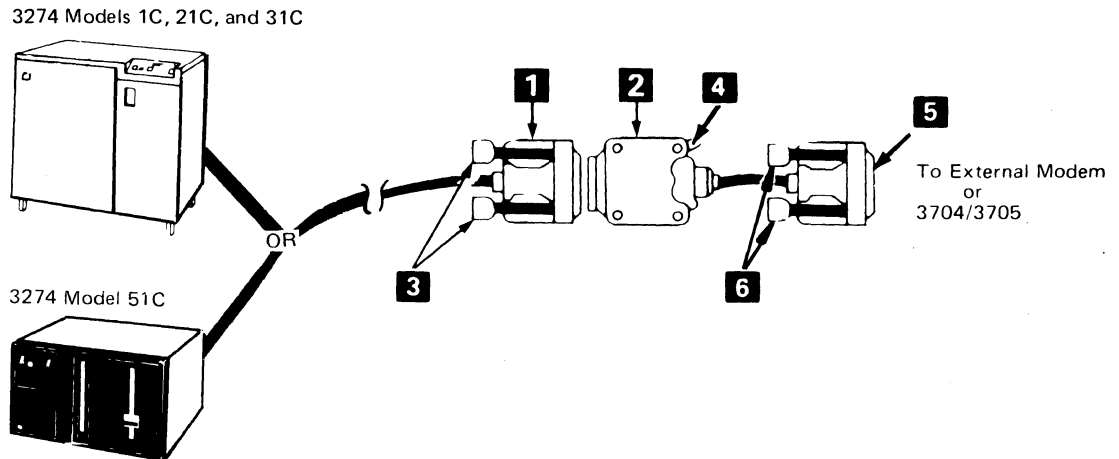
☐ Connect the cable plug **1** on the long section of the communication cable to the socket **2** on the short section of the communication cable. Tighten the thumb-screws **3** of the cable plug **1** securely with your fingers.

☐ Set the TEST/OPER switch **4** to OPER.

☐ Connect the cable plug **5** to the modem or to the 3704/3705 Line Set 1F Inter-face Cable Connector (for direct attachment to a 3704/3705). Tighten the thumbscrews **6** of the cable plug **5** securely with your fingers.

3274 Model 51C with an External Modem Attached to a
Switched Line or Models 1C, 21C, 31C, and 51C Attached to a
Nonswitched Line with a United Kingdom Datel Modem

You have received either a Version 1 or Version 2 communication cable with your 3274.
Follow the instructions that apply to the version you received.

Version 1 Cable

☐ Connect the cable plug **1** attached to the long communication cable to the socket
2 of the 0.4-meter (15-in.) communication cable. Tighten the thumbscrews **5** of
the cable plug **1** securely with your fingers.

☐ Set the TEST/OPER switch **3** to OPER.

☐ Connect the cable plug **4** on the other end of the 0.4-meter (15-in.) cable to the
modem.

3274 Models 1C, 21C, and 31C

Long Cable   **1**   **2**   **3**   0.4-Meter (15-In.) Cable   **4**

OR   **5**   To United Kingdom
                                                                 Datel Modem

3274 Model 51C
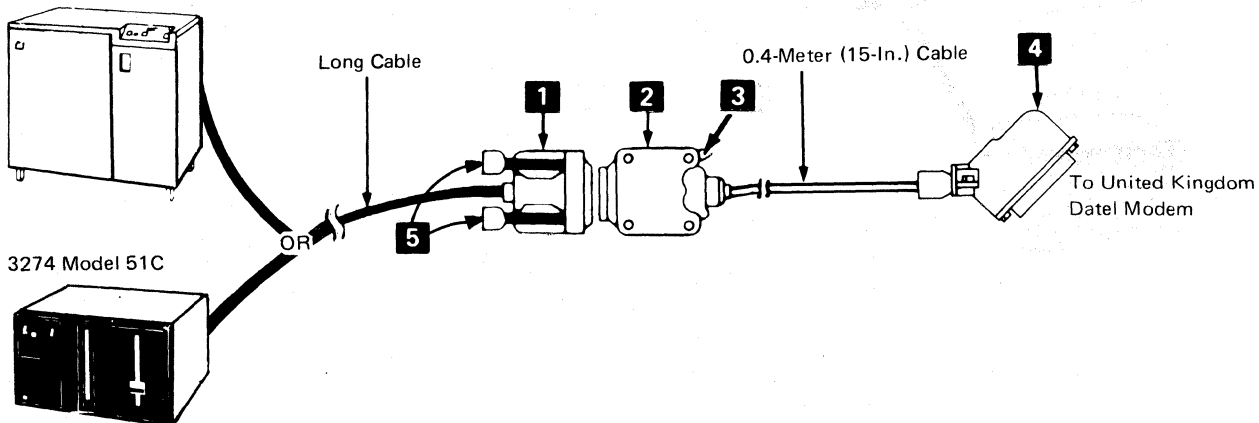
Version 2 Cable

☐ Connect the cable plug **1** attached to the long communication cable labeled MODEM to the socket **2** of the 0.4-meter (15-in.) communication cable. Tighten the thumbscrews **5** of the cable plug **1** securely with your fingers.

☐ Set the TEST/OPER switch **3** to the OPER position.

☐ Connect the cable plug **4** on the other end of the 0.4-meter (15-in.) cable to the modem.

3274 Models 1C, 21C, and 31C

Label-MODEM

0.4-Meter (15-In.) Cable

To United Kingdom Datel Modem
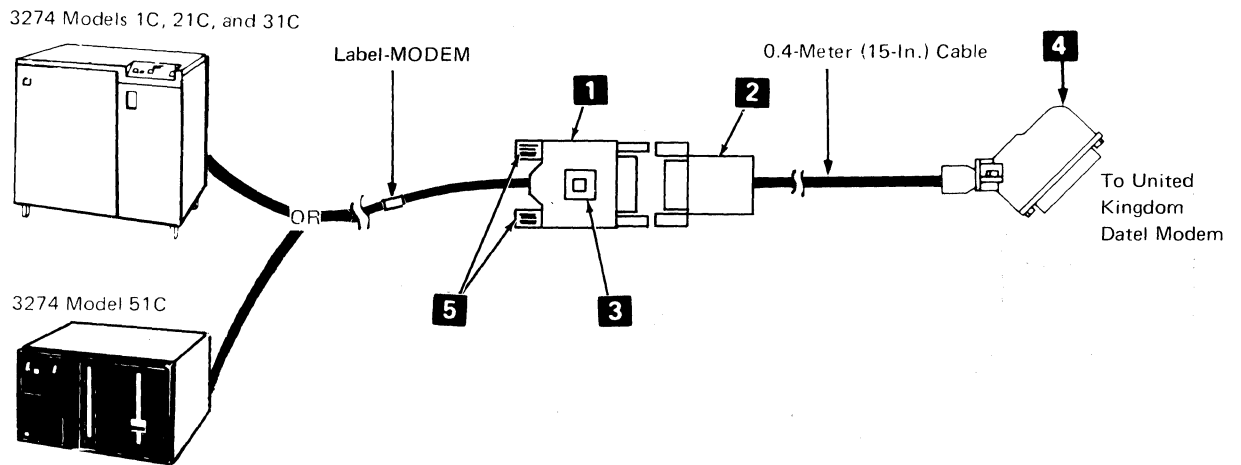
3274 Model 51C

Loop Adapter Cable

3274 Model 51C with a Loop Adapter Attached to a Loop (All Countries)

The 3274 Model 51C communication cable that attaches to the loop is called the *Loop Station Connector (LSC) cable.*

☐ Plug the LSC cable connector **3** into the LSC receptacle **2** from the loop. Push the connector until it snaps into the receptacle.

Note: *To disconnect the LSC cable from its receptacle, press the locking button* **1** *on the LSC connector as far as it will go and pull the connector from the receptacle.*
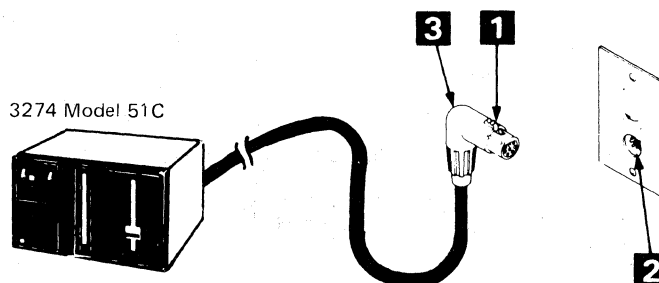
3274 Model 51C

X.21 Cable

3274 Model 51C with X.21 Attached to a Switched or
Nonswitched Line or Models 1C, 21C, and 31C with
X.21 Attached to a Nonswitched Line

☐   Set the TEST/OPER switch **1** to the OPER position.

☐   Connect the cable plug **2** on the long section of the communication cable to the
socket **3** on the short section of the communication cable. Tighten the thumb-
screws **4** of the cable socket **3** securely with your fingers.

☐   Connect the cable plug **5** to the modem. Tighten the thumbscrews **6** of the cable
plug **5** securely with your fingers.

3274 Models 1C, 21C, and 31C
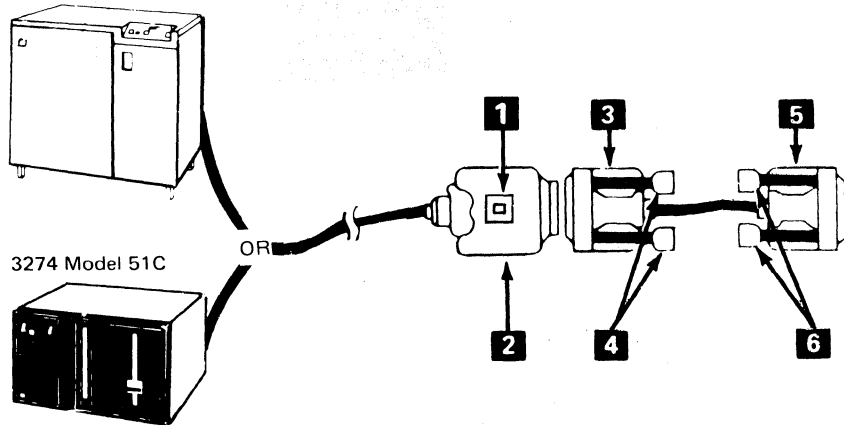
3274 Model 51C

Digital Data Service Adapter Cable

3274 Models 1C, 21C, 31C, and 51C with Digital
Data Service (DDS) Adapter Attached to AT&T
Channel Service Unit (U. S. Only)

☐ Set the TEST/OPER switch **1** to the OPER position.

☐ Connect the cable plug **2** on the end of the cable labeled CSU to the channel service unit. Tighten the thumbscrews **3** of the cable plug securely with your fingers.

3274 Models 1C, 21C, and 31C

OR
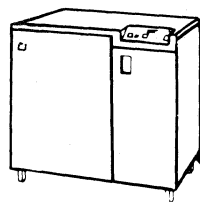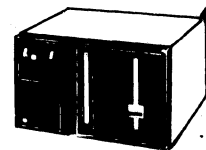
3274 Model 51C

Label-CSU

To Channel
Service Unit
(CSU)

Integrated Modem Cables

3274 Models 31C and 51C with an Integrated Modem
Attached to a Nonswitched Line (U.S. and Canada Only)

☐   Plug the four-prong plug attached to the communication cable marked
     NONSWITCHED into the four-pin receptacle connected to the nonswitched line.

3274 Model 31C

Label-NONSWITCHED

3274 Model 51C

OR
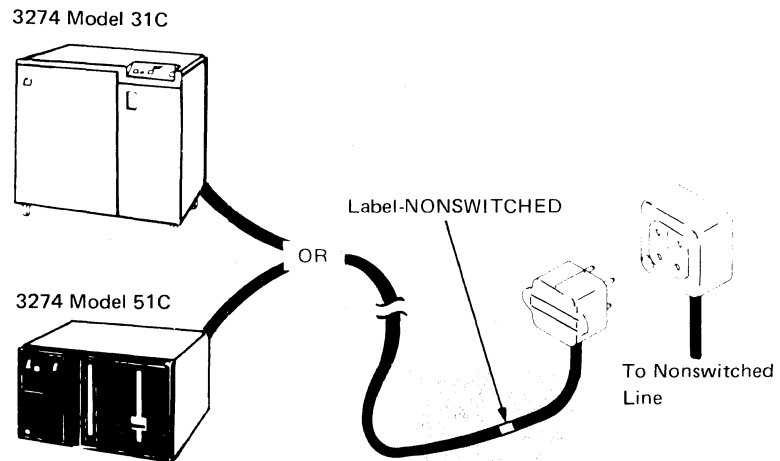
To Nonswitched
Line

You will receive the following parts in the customer envelope when the 3274 is delivered to your site.
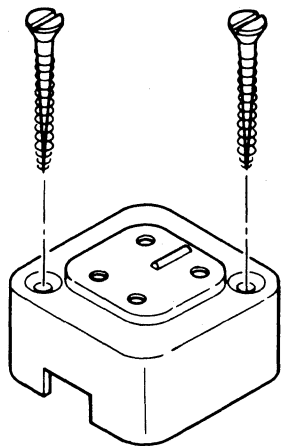
1 Four-Pin Receptacle
(with two screws)
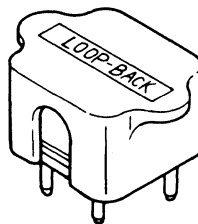
2 LOOP-BACK Plug

3 SHORTING Plug

☐ Keep the LOOP-BACK plug **2** and SHORTING plug **3** in a convenient place for future use. (When required, the NTT may ask you to use them for testing the communication lines or associated equipment.)

The four-pin receptacle **1** is for the 3274 Models 31C and 51C communication cable connection and should be connected to the NTT nonswitched line through the NTT-provided device, PD-1A, according to the following instructions:

☐ Connect one end of a pair cable to the R and GN terminals of the four-pin receptacle **1** Connect the opposite end to the DS terminals of the PD-1A.

☐ Connect one end of another pair cable to the Y and BK terminals of the four-pin receptacle **1** and the opposite end to the DR terminals of the PD-1A.

Four-Pin Receptacle **1**

PD-1A

DS

DR

To Nonswitched Line
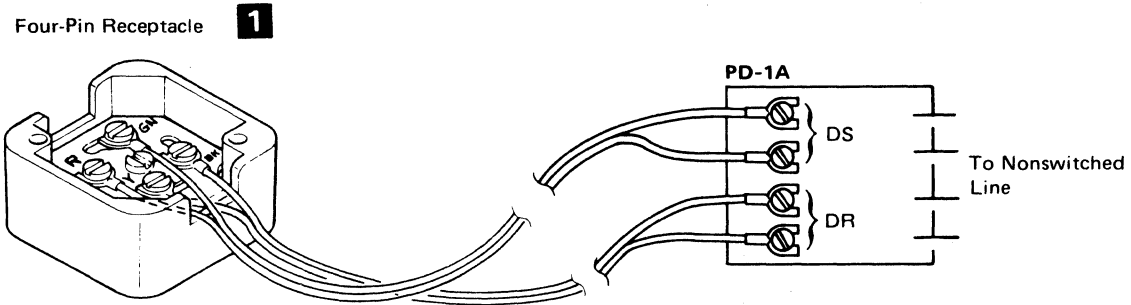
☐ Attach the four-pin receptacle **2** , using the two screws supplied, to a place that is convenient to connect the communication cable from the **3274**.

☐ Plug the four-prong plug **3** attached to the communication cable marked NON-SWITCHED into the four-pin receptacle connected to the nonswitched line.

3274 Model 31C

3274 Model 51C

OR

Label-NONSWITCHED

3

2

To Nonswitched Line
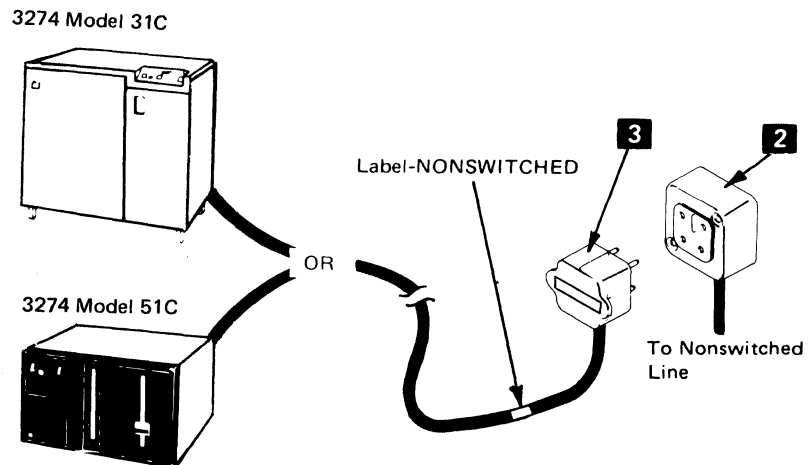
3274 Model 51C with a 1200-BPS Integrated Modem
Attached to a Switched Line with Manual Answer
(U. S. and Canada Only)

☐ Plug the four-prong plug attached to the communication cable marked SWITCHED into the four-pin receptacle connected to the data coupler.

Label-SWITCHED

3274 Model 51C

To Data Coupler
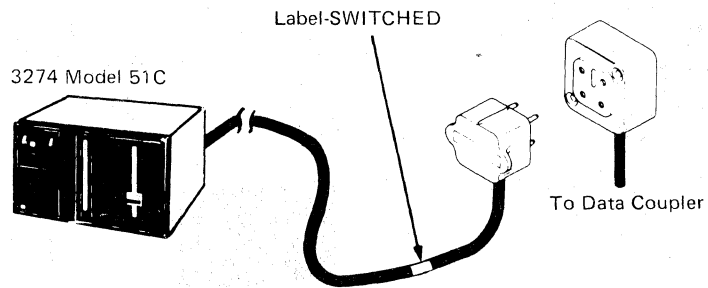
*3274 Model 51C with a 1200-BPS Integrated Modem Attached to
a Nonswitched Line with Switched Network Backup (SNBU) and
Manual Answer (U. S. and Canada Only)*

☐ Plug the four-prong plug attached to the communication cable marked
NONSWITCHED into the four-pin receptacle connected to the nonswitched line.

☐ Plug the four-prong plug attached to the communication cable marked
SWITCHED into the four-pin receptacle connected to the data coupler.

Label-NONSWITCHED

To Nonswitched
Line

3274 Model 51C

Label-SWITCHED

To Data Coupler

Note: *It is recommended that:*

● *The four-pin receptacle from the data coupler (Type CBS or CDT, or FCC-certified
equivalent) be labeled SWITCHED LINE.*

● *The four-pin receptacle from the nonswitched line be labeled NONSWITCHED LINE.*

3274 Model 51C with a 1200-BPS Integrated Modem
Attached to a Switched Line with Auto-Answer
(U. S. and Canada Only)

☐ Attach the communication cable's color-coded wires to the data coupler as shown in the following table and diagram.

Coupler Terminal	Wire Color
DR	Black
DT	White
RI	Violet
OH	Blue
CCT	Brown
DA	Yellow
SG	Gray
SH	Red

Telephone Company-Provided
CBS Data Coupler or
FCC-Certified Equivalent

DA   OH   DT

SH   SG   CCT   RI   DR

3274 Model 51C

Label-DATA COUPLER
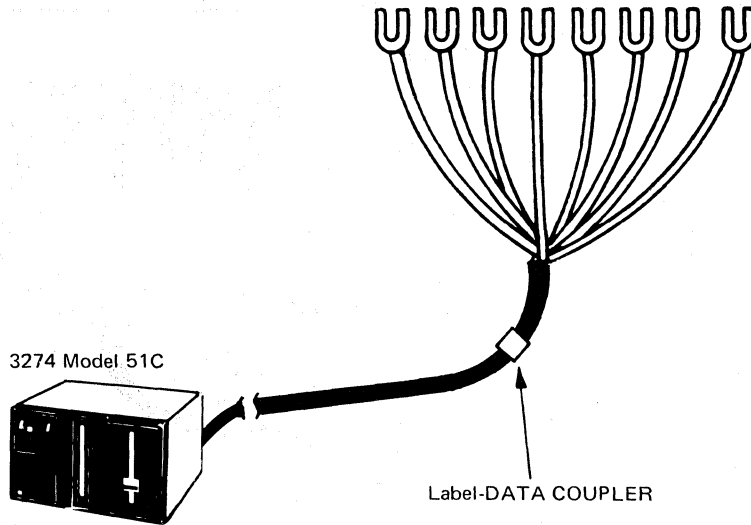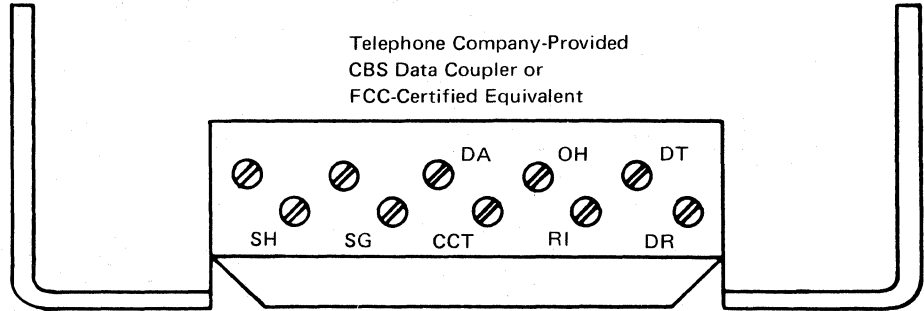
3274 Model 51C with a 1200-BPS Integrated Modem Attached
to a Nonswitched Line with Switched Network Backup (SNBU)
and Auto-Answer (U. S. and Canada Only)

☐ Plug the four-prong plug attached to the communication cable marked NON-SWITCHED into the four-pin receptacle connected to the nonswitched line.
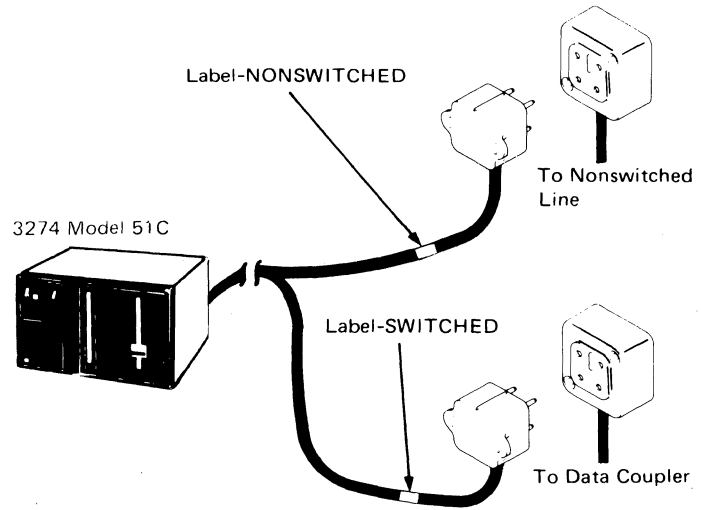
☐ Attach the communication cable's color-coded wires to the data coupler, as shown in the following table and diagram.

Coupler Terminal	Wire Color
DR	Black
DT	White
RI	Violet
OH	Blue
CCT	Brown
DA	Yellow
SG	Gray
SH	Red

Telephone Company-Provided
CBS Data Coupler or
FCC-Certified Equivalent

DA   OH   DT

SH   SG   CCT   RI   DR

Label-SWITCHED

3274 Model 51C

To Nonswitched Line
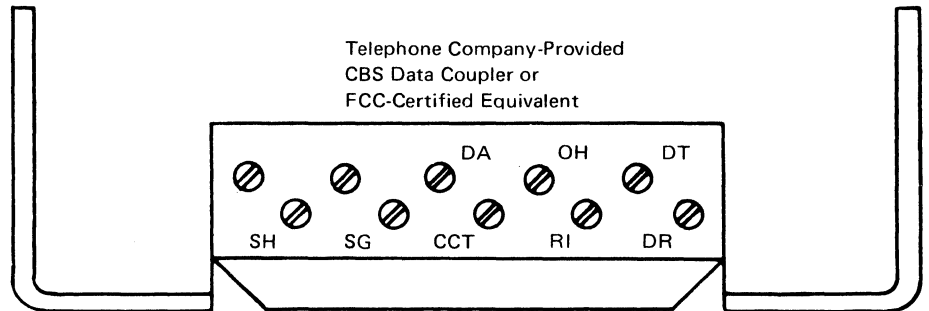
Label-NONSWITCHED

3274 Model 51C with a 1200-BPS Integrated Modem
Attached to a Nonswitched Line with Switched Network
Backup (SNBU) and Auto-Answer (Countries Other Than
the U. S. and Canada That Do Not Use Communication
Cable Adapters)

☐ Connect the Transmit Pair (White and Red) wires of the cable labeled
NONSWITCHED—A communication cable to the communication facility termination
as follows:

● White wire to -XMIT terminal

● Red wire to +XMIT terminal

☐ Connect the Receive Pair (Black and Yellow) wires of the cable labeled
NONSWITCHED—A communication cable to the communication facility termination
as follows:

● Black wire to +REC terminal

● Yellow wire to -REC terminal
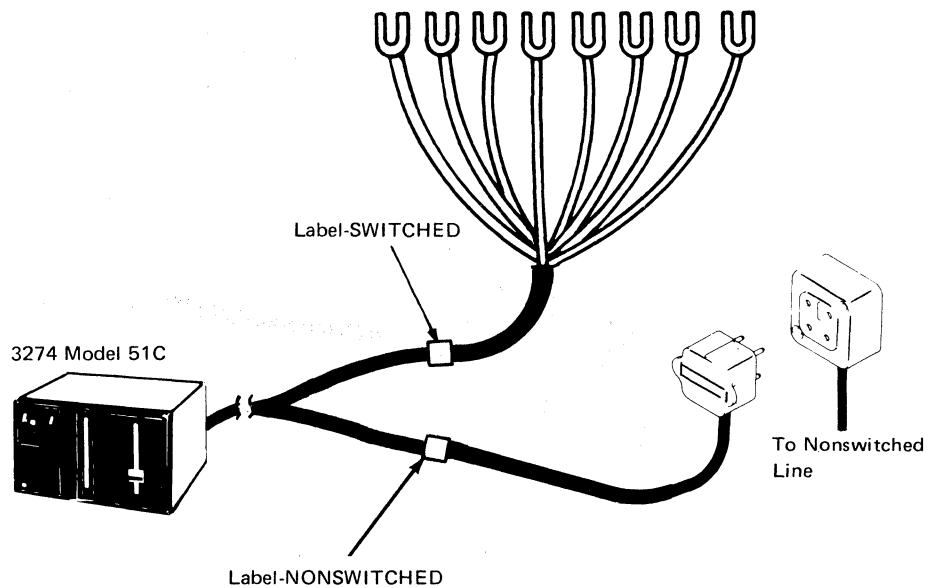
☐ Connect the Switched Lines (White and Red) wires of the cable labeled SWITCHED—B
communication cable to the Telephone Line terminals of the PTT connection block.
Either wire may be connected to either terminal.

☐ Connect the Telephone Set (Black and Yellow) wires of the cable labeled
SWITCHED—B communication cable to the Telephone Set terminals of the PTT
connection block. Either wire may be connected to either terminal.

Label-NONSWITCHED—A

Transmit Pair: White, Red

Receive Pair: Black, Yellow

3274 Model 51C

Switched Lines: White, Red

Telephone Set: Black, Yellow

Label-SWITCHED—B

3274 Model 51C with a 1200-BPS Integrated Modem
Attached to a Switched Line with Auto-Answer (Countries
Other Than the U. S. and Canada That Do Not Use
Communication Cable Adapters)

Note: *The communication cable labeled NONSWITCHED—A is not used in this configuration.*

☐ Connect the Switched Lines (White and Red) wires of the section of the communication cable labeled SWITCHED—B to the Telephone Line terminals of the PTT connection block. Either wire may be connected to either terminal.

☐ Connect the Telephone Set (Black and Yellow) wires of the section of the communication cable labeled SWITCHED—B to the Telephone Set terminals of the PTT connection block. Either wire may be connected to either terminal.

Label-NONSWITCHED—A

Unused

3274 Model 51C

Switched Lines: White, Red

Telephone Set: Black, Yellow

Label-SWITCHED—B
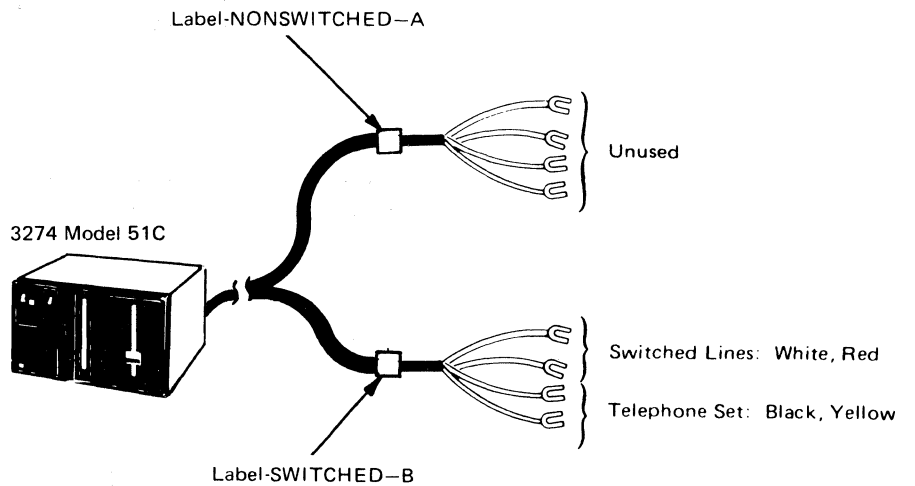
3274 Model 51C with a 1200-BPS Integrated Modem
Attached to a Switched Line with Auto-Answer (Countries
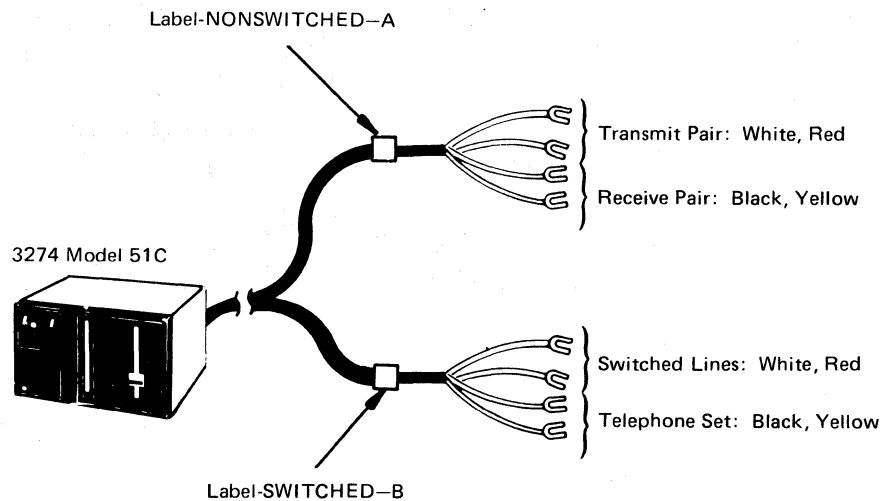*Other Than the U. S. and Canada That Use Communication*
Cable Adapters)

☐ Plug the four-prong plug attached to the communication cable marked SWITCHED into the four-pin receptacle connected to the data coupler.

3274 Model 51C

Label-SWITCHED

To Communication
Cable Adapter
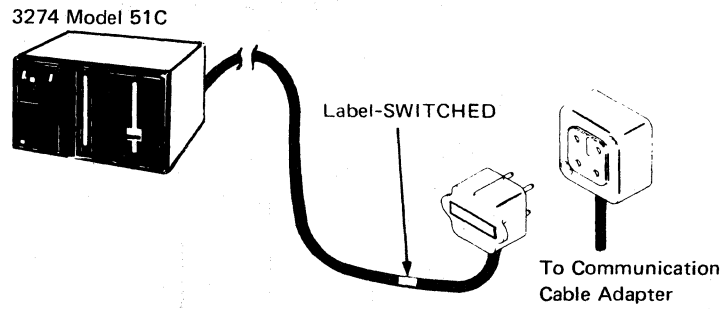
3274 Models 31C and 51C with an Integrated Modem Attached
to a Switched or Nonswitched Line (Countries Other Than the U. S.
and Canada That Do Not Use Communication Cable Adapters)

Yellow:
For nonswitched line,
connect to +Receive.
For switched line,
connect to telephone set.

White:
For nonswitched line,
connect to −Transmit.
For switched line,
connect to telephone set.

Black:
For nonswitched line,
connect to −Receive.
For switched line,
connect to telephone set.

Red:
For nonswitched line,
connect to +Transmit.
For switched line,
connect to telephone set.

3274 Model 31C

3274 Model 51C

OR
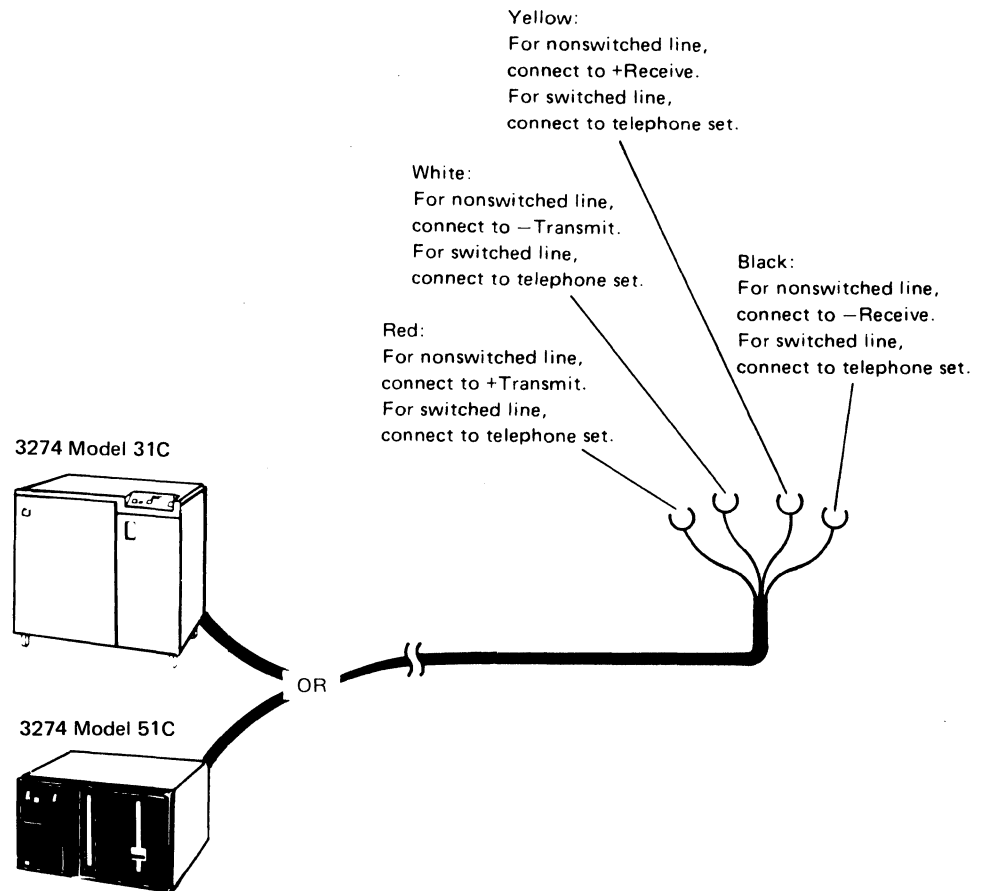
3274 Models 31C and 51C with a 1200-BPS Integrated
Modem Attached to a Switched Line or Any Integrated
Modem Attached to a Nonswitched Line (France Only)

3274 Model 31C

3274 Model 51C

OR
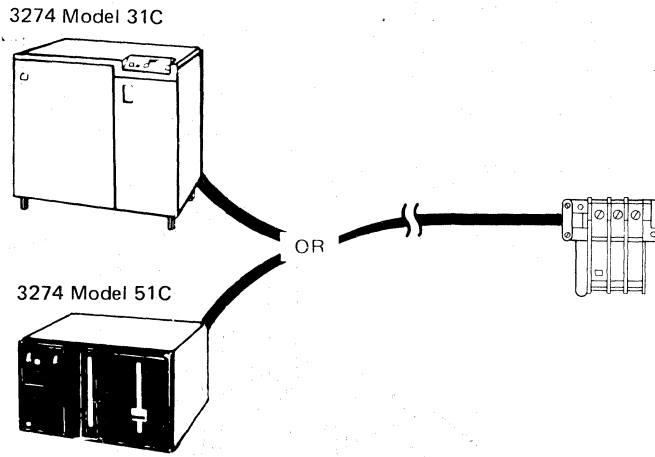
Communication Cable Adapters for Countries Other Than
the U. S. and Canada

These adapters are for use with integrated modems in countries other than the U. S. and Canada. The adapter is installed by inserting the four-prong plug of the communication cable from the 3274 into the four-pin receptacle on the adapter. The other end of the adapter is attached to the communications line.

Finland Switched Line Adapter
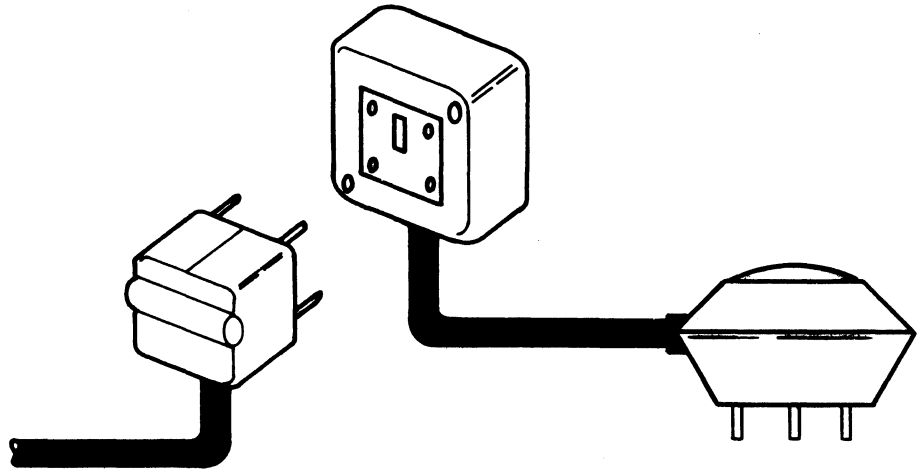
Finland Nonswitched Line Adapter
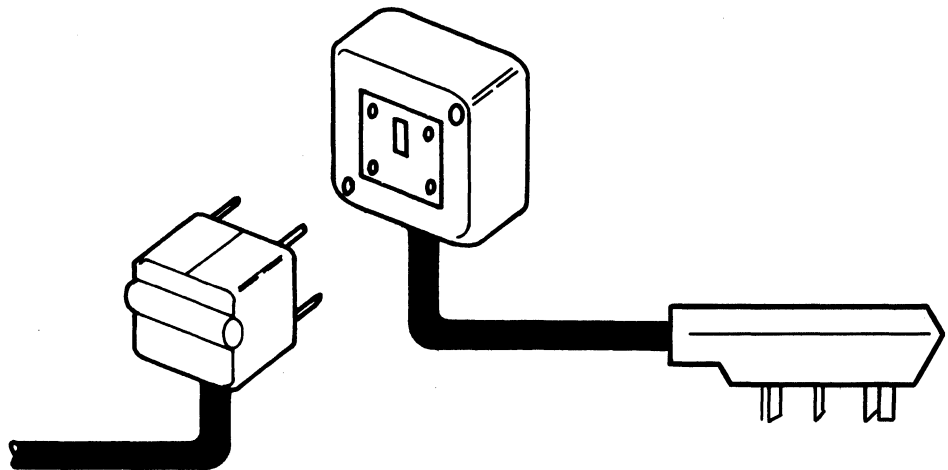
Austria and Israel Switched and Nonswitched Line Adapter and Belgium, Netherlands, and
Switzerland Nonswitched Line Adapter
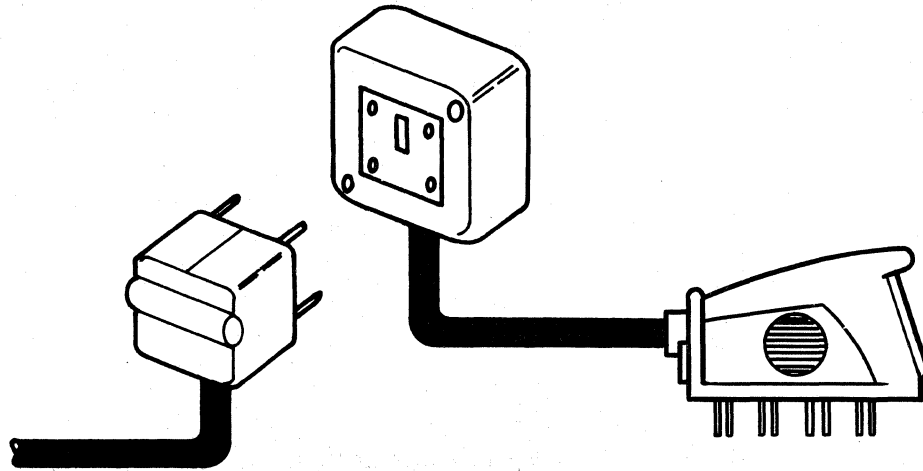
Netherlands Switched Line Adapter
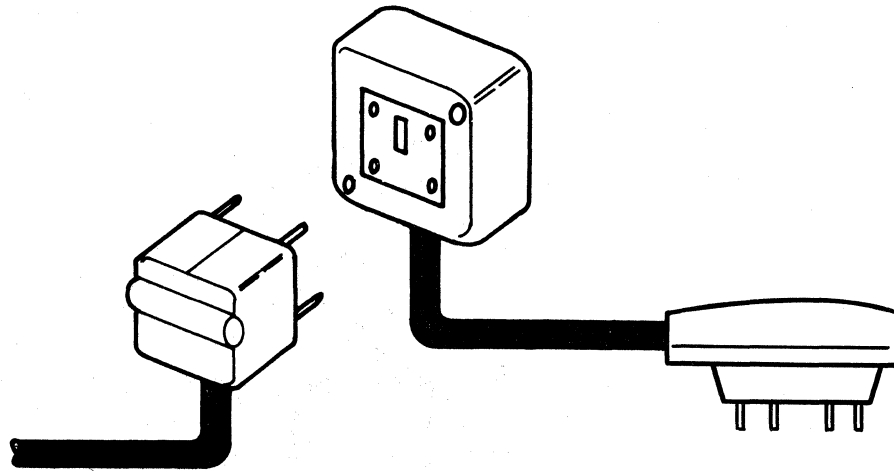
CCITT V.35 Interface Cable

3274 Models 1C, 21C, 31C, and 51C Attached
to a CCITT V.35 Interface

You have received a dual (two cable sections joined by a connector) communication cable with your 3274.

Follow these instructions:

Set the TEST/OPER switch **1** to the OPER position. Connect the cable plug **2** to the modem or to the 3704/3705 Line Set 1W Interface Cable connector (for direct attachment to a 3704/3705). Tighten the thumbscrews **3** of the cable plug securely with your fingers.

Models 1C, 21C, and 31C
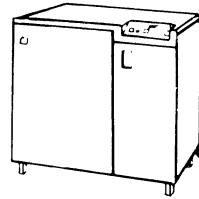
Model 51C
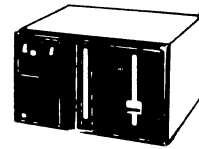
OR

OPER/TEST

34-Pin Connector

Appendix G. Planning for 3274 Model 31C Modem Address Switch Settings

Modem Address Switches (Integrated Modems Only)

The Modem Address switches are installed only on a 3274 Model 31C that has an integrated modem feature (#5640, 5740, 5840, or 5842) installed. These switches are located behind a door on the control panel. These switches must be set to the binary equivalent of either your BSC control unit address (this is the hexadecimal polling address you obtained from the system programmer for your response to sequence number 301) or your SDLC control unit address (this is your response to sequence number 302). Failure to set the Modem Address switches properly will result in valid data operations of the 3274 but inability to execute the link problem determination aid (LPDA) function of the integrated modem.

Use Figure G-1 to convert your sequence number response to its binary equivalent. For example, if your response to sequence number 301 is 21, the eight Modem Address switches should be set as shown in Figure G-2.

Enter the Modem Address switch settings in step 2 of the instructions following Figure G-2. Give the completed instructions to the person who will customize the 3274.

Numeric Value	Modem Address Switch Settings			
0	Off	Off	Off	Off
1	Off	Off	Off	On
2	Off	Off	On	Off
3	Off	Off	On	On
4	Off	On	Off	Off
5	Off	On	Off	On
6	Off	On	On	Off
7	Off	On	On	On
8	On	Off	Off	Off
9	On	Off	Off	On
A	On	Off	On	Off
B	On	Off	On	On
C	On	On	Off	Off
D	On	On	Off	On
E	On	On	On	Off
F	On	On	On	On

Figure G-1. Conversion of BSC Control Unit Address and SDLC Control Unit Address to Binary-Equivalent Modem Address Switch Settings on 3274 Model 31C

Response to Sequence Number 301	2				1			
Switch Number	1	2	3	4	5	6	7	8
Switch Setting	Off	Off	On	Off	Off	Off	Off	On

Figure G-2. Example of 3274 Model 31C Modem Address Switch Settings

Instructions for Setting 3274 Model 31C Modem Address Switches

1. Open the customer access area door on the control panel. Insert your finger into the recessed area to the left of the door. Pull the edge of the door toward you, and swing it to the right.
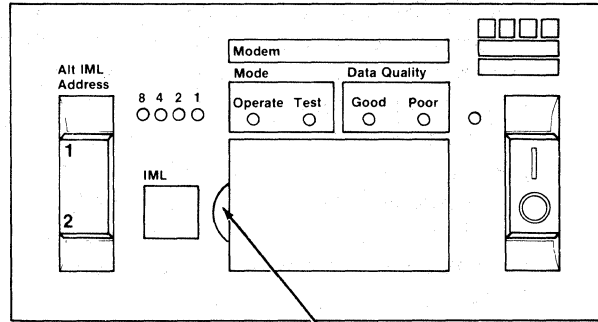
Insert finger in recess, and pull door to open.

2. Set the Modem Address switches on or off as indicated in the boxes below. Press the top of the switch for on; press the bottom of the switch for off.
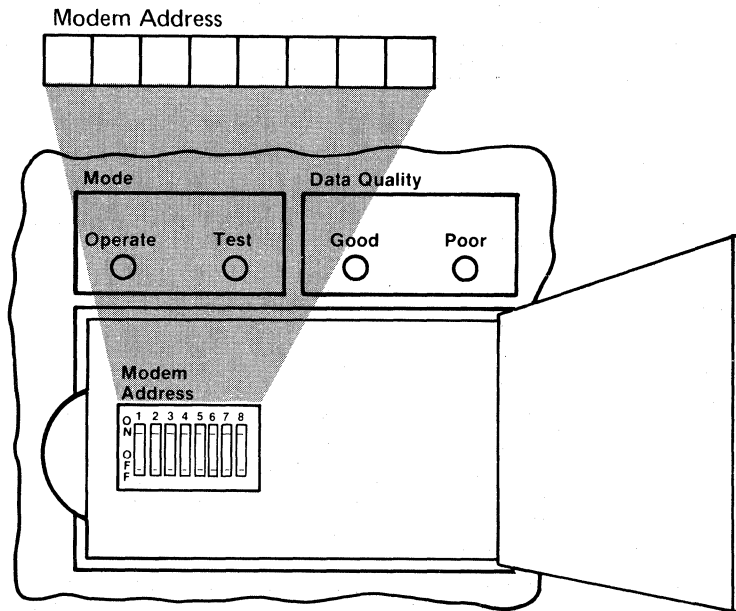
3. Close the customer access area door.
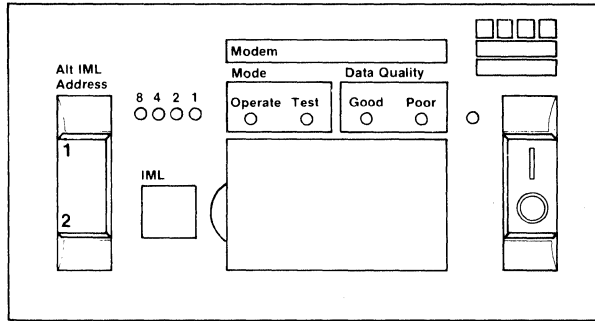
4. Your 3274 is now ready for use.
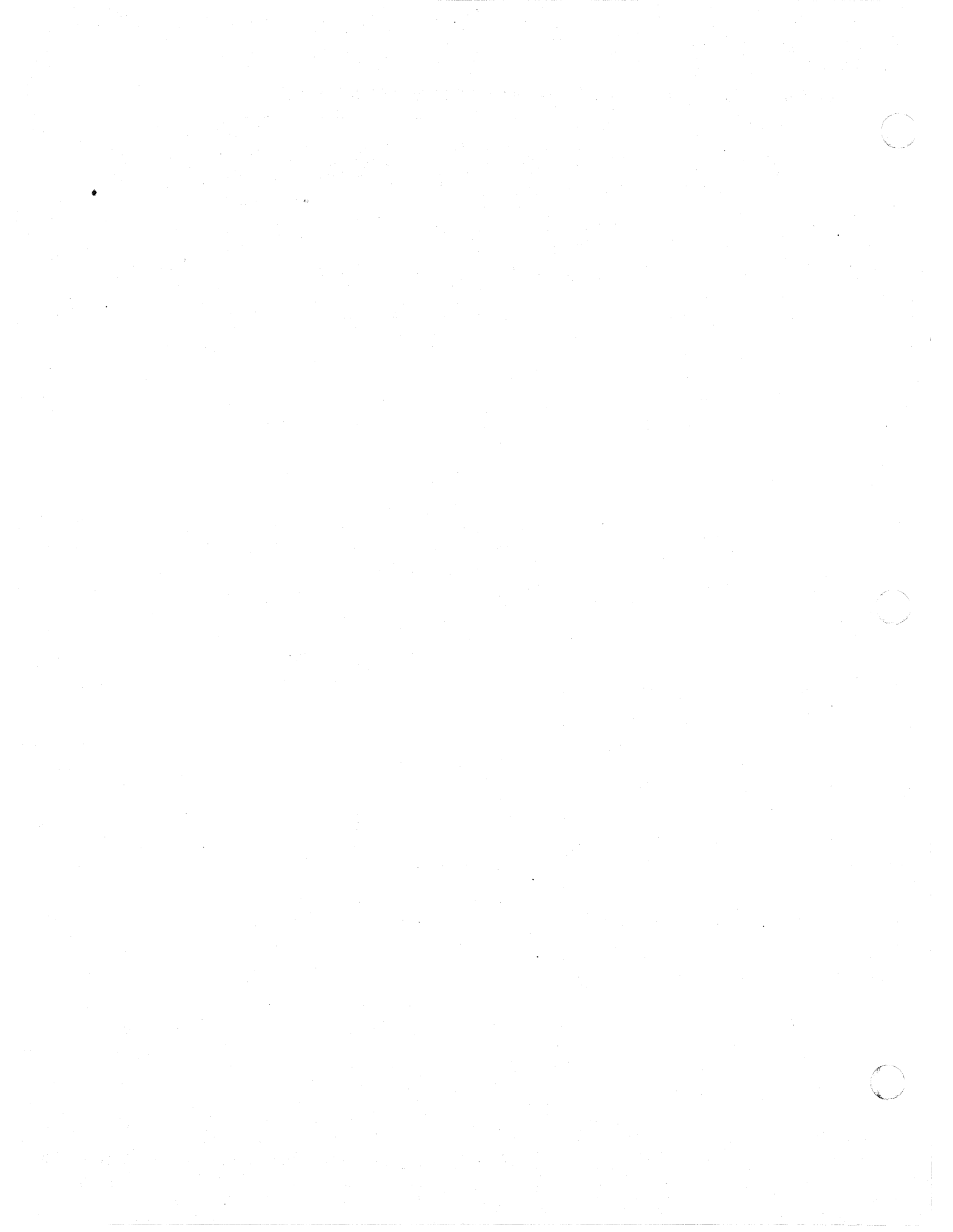
Appendix H. Planning for 3274 Model 51C Switch Settings

Of the many switches that may be installed on a Model 51C operator panel, three switch groups require some planning: Transmit Level switches, Loop Data Speed switches, and Modem Address switches. The Transmit Level switches control the signal level between the Model 51C and the host. The Loop Data Speed switches control the data rate of the loop. The Modem Address switches determine the address that the host will use to communicate with the Model 51C.

Only one of these switch groups will be on your Model 51C. Transmit Level switches are installed on a Model 51C that attaches to a 1200-bps switched network (U.S. only). Loop Data Speed switches are installed on a Model 51C that attaches to an 8100 Information System or a 4331 Processor loop. Modem Address switches are installed on a Model 51C with a greater-than-1200-bps integrated modem that attaches to a nonswitched network.

The following descriptions tell you how to determine whether your Model 51C has any of these switches, how to determine the proper switch settings, and what information to pass on to the person who will customize your Model 51C.

Transmit Level Switches (1200 BPS Integrated Modem, U.S. and Canada Only)

The Transmit Level switches are installed only on a 3274 Model 51C Control Unit that has an integrated modem feature (#5501, 5502, 5507, or 5508) that attaches to a switched network. These switches are used to match the Model 51C transmit level to the data coupler (type CDT, CBS, or FCC-certified equivalent) that is attached to the termination of the communication line. Consult the data coupler manufacturer's representative to determine the proper dBm[1] level for the data coupler. Use Figure H-1 to determine the correct setting of the Transmit Level switches for the dBm level obtained from the manufacturer's representative; then enter this information in the instructions following the figure. Give the completed instructions to the person who will customize your Model 51C.

---

[1] Same as decibel (dB), but comparison is to an absolute value of power, 1 milliwatt.

dBM Level	Transmit Level Switches			
	−1dB	−2dB	−4dB	−8dB
0	OFF	OFF	OFF	OFF
−1	ON	OFF	OFF	OFF
−2	OFF	ON	OFF	OFF
−3	ON	ON	OFF	OFF
−4	OFF	OFF	ON	OFF
−5	ON	OFF	ON	OFF
−6	OFF	ON	ON	OFF
−7	ON	ON	ON	OFF
−8	OFF	OFF	OFF	ON
−9	ON	OFF	OFF	ON
−10	OFF	ON	OFF	ON
−11	ON	ON	OFF	ON
−12	OFF	OFF	ON	ON
−13	ON	OFF	ON	ON
−14	OFF	ON	ON	ON
−15	ON	ON	ON	ON

Figure H-1. 3274 Model 51C Transmit Level Switches

Instructions for Setting 3274 Model 51C Transmit Level Switches (U.S. and Canada Only)

1. Open the customer access area door on the bottom left of the Model 51C. To unlatch the door, turn the slotted screw head counterclockwise with a coin.
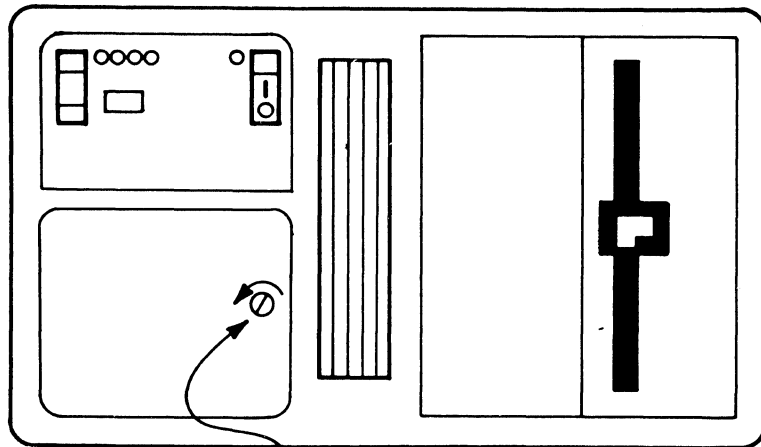
Slotted Screw Head
(Turn counterclockwise to open)

2. Set the Transmit Level switches on or off as indicated in the boxes below. Push the switch up for on and down for off.
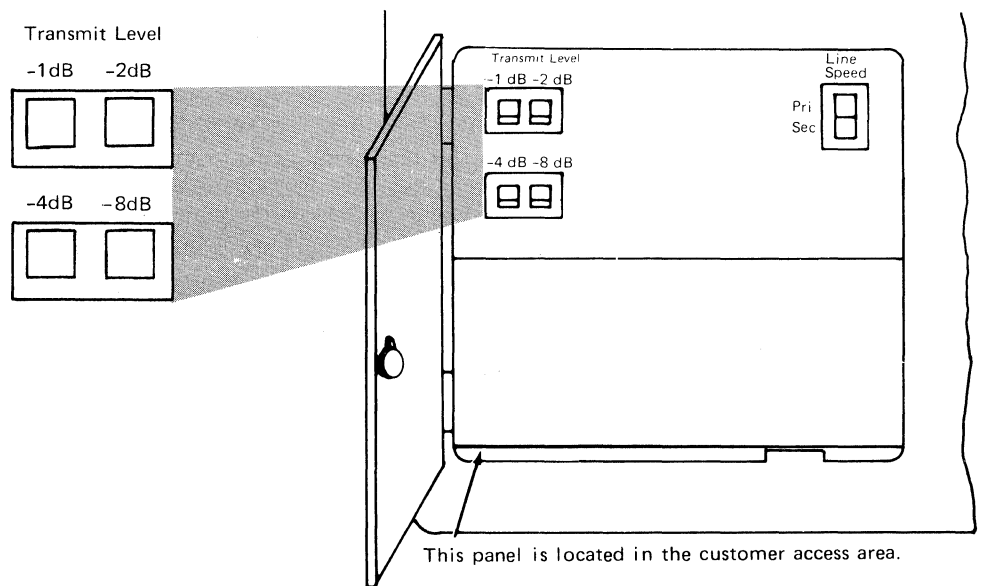
Transmit Level

-1dB   -2dB

-4dB   -8dB

Transmit Level
-1 dB -2 dB

-4 dB -8 dB

Line
Speed

Pri

Sec

This panel is located in the customer access area.

3. Close the customer access area door. Secure the latch by turning the slotted screw head clockwise with a coin.

Slotted Screw Head (Turn clockwise to secure)

4. Your 3274 is now ready for use.

Loop Data Speed Switches (Loop Adapter Feature Only)

The Loop Data Speed switches are installed only on 3274 Model 51C Control Units that have the Loop Adapter feature (#4850) to attach to a 4331 Processor or to an 8100 Information System loop. These switches are used to select the primary and secondary loop data speeds. If the loop operates at a carrier speed of 9600 bps, the operator can switch the loop data speed by using the Pri/Sec switch on the Model 51C operator panel. [If the loop operates at a carrier speed of 38,400 bps, the Sec (Secondary) position of the Pri/Sec switch should not be used.]

To determine the Loop Data Speed settings, first select the table in Figure H-2 for the loop carrier speed, either 9600 bps or 38,400 bps. Using this table, find the primary and secondary loop data speeds that your system is going to use. The switch settings are shown to the left of the loop data speeds you select. Fill in the switch settings on the instructions following Figure H-2. Give the completed instructions to the person who will customize your Model 51C.

For a loop carrier speed of 9600 bps, use
the following table:

Loop Data Speed Switch Setting			Line Speed (bps)	
1	2	3	Pri	Sec
Off	Off	Off	9600	4800
Off	Off	On	9600	2400
Off	On	Off	4800	2400
On	Off	Off	2400	1200

For a loop carrier speed of 38,400 bps
(direct-attached loop only), use the
following table:

Loop Data Speed Switch Setting			Line Speed (bps)	
1	2	3	Pri	Sec
Off	Off	Off	38,400	*
On	Off	Off	9600	*

*Do not use.

Figure H-2. Loop Data Speed Switch Settings. (See sequence number 347 for additional information on changing loop speed selection.)

Instructions for Setting 3274 Model 51C Loop Data Speed Switches

1. Open the customer access area door on the bottom left of the Model 51C. To unlatch the door, turn the slotted screw head counterclockwise with a coin.
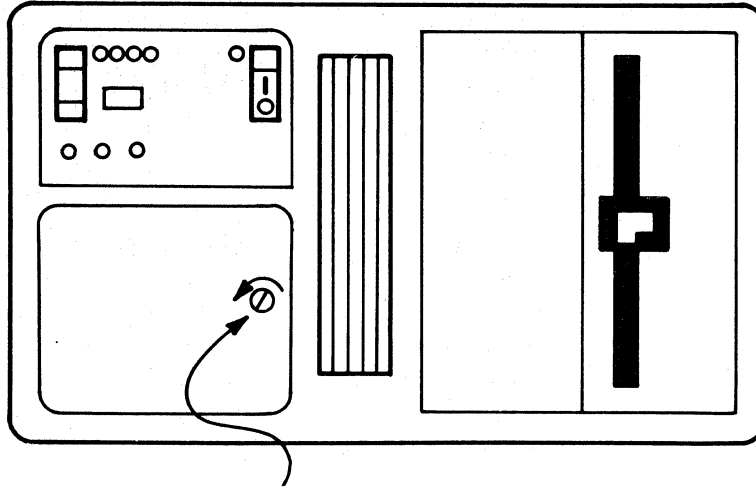
Slotted Screw Head
(Turn counterclockwise to open)

2. Set the Loop Data Speed switches on or off as indicated in the boxes below. Push the switch up for on and down for off.
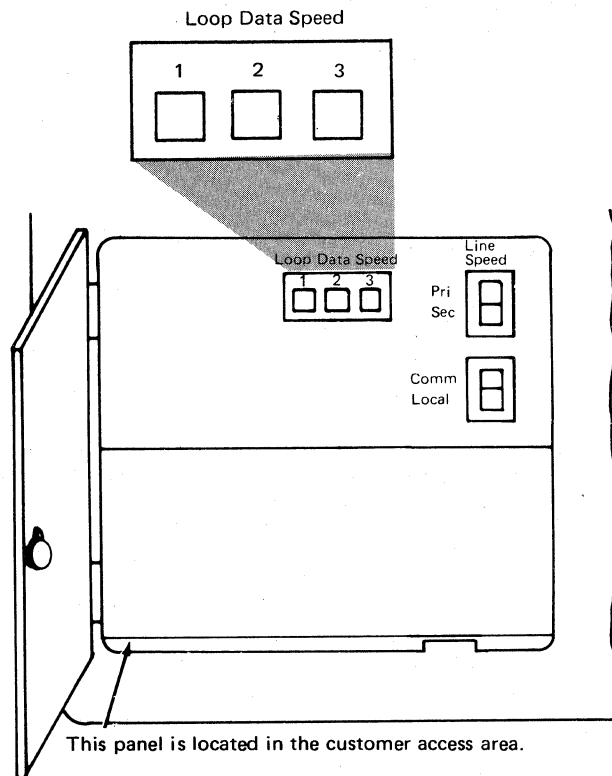
Loop Data Speed

This panel is located in the customer access area.

3. Close the customer access area door. Secure the latch by turning the slotted screw head clockwise with a coin.
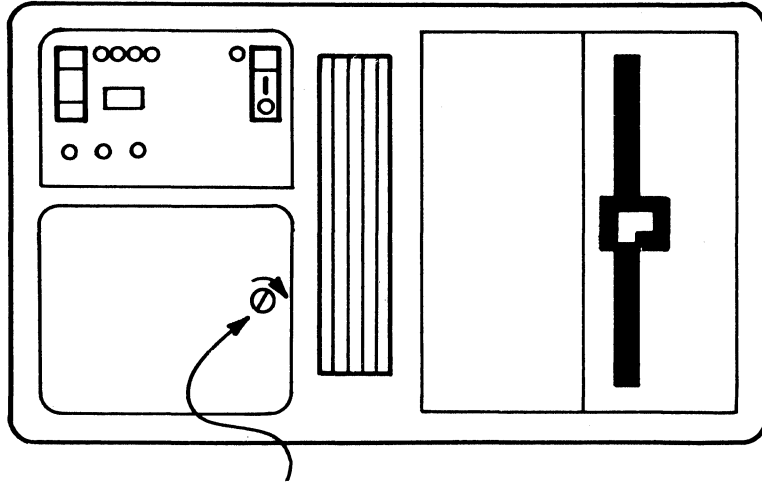
Slotted Screw Head (Turn clockwise to secure)

4. Your 3274 is now ready for use.

Modem Address Switches (Integrated Modems with Speeds Greater Than 1200 BPS Only)

The Modem Address switches are installed only on a 3274 Model 51C that has an integrated modem feature (#5640, 5740, 5840, or 5842) installed. These switches are located behind a door on the control panel. These switches must be set to the binary equivalent of either your BSC control unit address (this is the hexadecimal polling address you obtained from the system programmer for your response to sequence number 301) or your SDLC control unit address (this is your response to sequence number 302). Failure to set the Modem Address switches properly will result in valid data operations of the 3274 but inability to execute the link problem determination aid (LPDA) function of the integrated modem.

Use Figure H-3 to convert your sequence number response to its binary equivalent. For example, if your response to sequence number 301 is 21, the eight Modem Address switches should be set as shown in Figure H-4.

Enter the Modem Address switch settings in Step 2 of the instructions following Figure H-4. Give the completed instructions to the person who will customize the 3274.

Numeric Value	Modem Address Switch Settings			
0	Off	Off	Off	Off
1	Off	Off	Off	On
2	Off	Off	On	Off
3	Off	Off	On	On
4	Off	On	Off	Off
5	Off	On	Off	On
6	Off	On	On	Off
7	Off	On	On	On
8	On	Off	Off	Off
9	On	Off	Off	On
A	On	Off	On	Off
B	On	Off	On	On
C	On	On	Off	Off
D	On	On	Off	On
E	On	On	On	Off
F	On	On	On	On

Figure H-3. Conversion of BSC Control Unit Address and SDLC Control Unit Address to Binary-Equivalent Modem Address Switch Settings on 3274 Model 51C

Response to Sequence Number 301	2				1			
Switch Number	1	2	3	4	5	6	7	8
Switch Setting	Off	Off	On	Off	Off	Off	Off	On

Figure H-4. Example of 3274 Model 51C Modem Address Switch Settings

Instructions for Setting 3274 Model 51C Modem Address Switches

1. Open the customer access area door on the bottom left of the Model 51C. To unlatch the door, turn the slotted screw head counterclockwise with a coin.
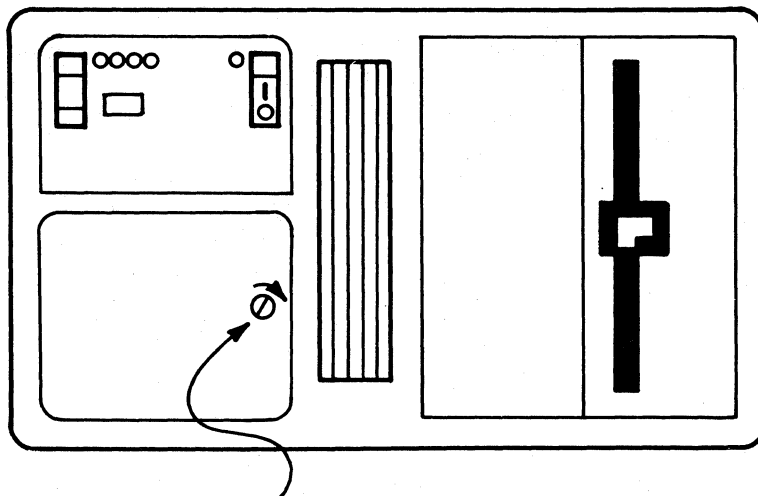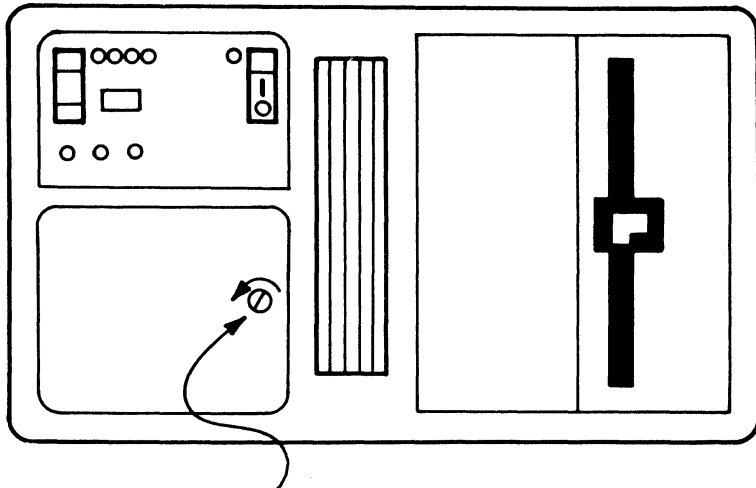

Slotted Screw Head
(Turn counterclockwise to open)

2. Set the Modem Address switches on or off as indicated in the boxes below. Press the top of the switch for on; press the bottom of the switch for off.
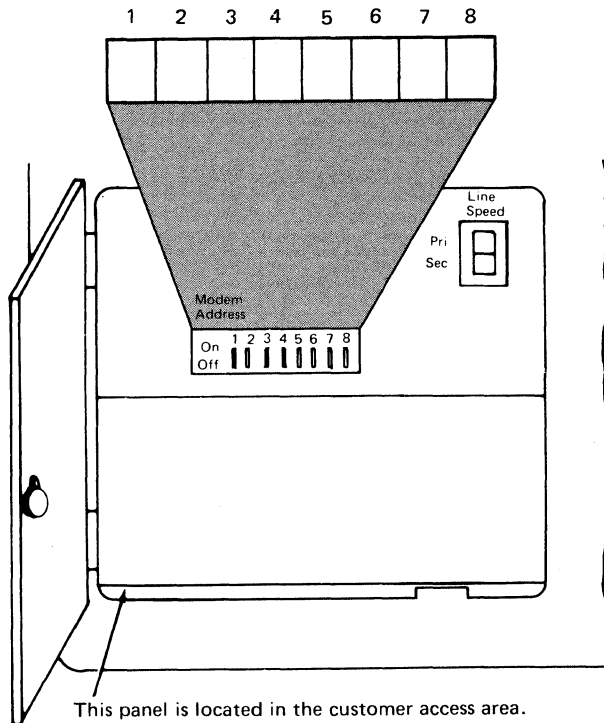
This panel is located in the customer access area.

3. Close the customer access area door. Secure the latch by turning the slotted screw head clockwise with a coin.
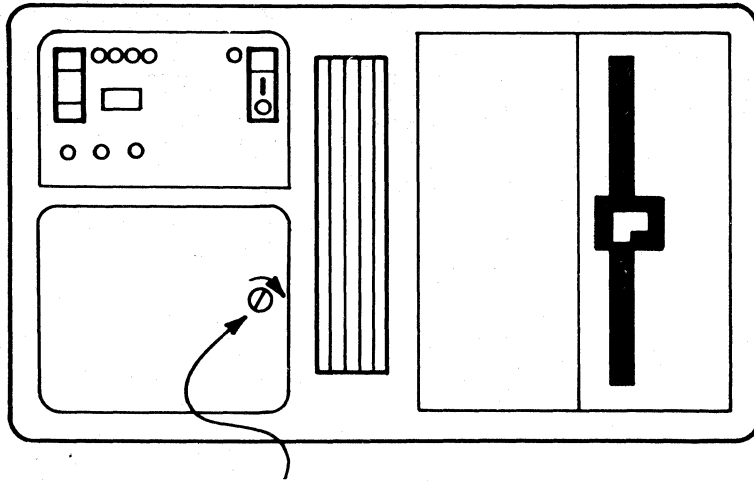
Slotted Screw Head (Turn clockwise to secure)

4. Your 3274 is now ready for use.

Appendix I. 3274 Control Storage Requirements

The following paragraphs describe how to determine the control storage requirements for the selected model of the 3274 Control Unit.

Models 1A, 1C, 1D, and 51C

After having selected the configuration support and the desired special features for your 3274, you will have to determine the control storage required. Because some combinations of functions and features exceed the basic storage capacity of the control unit you have chosen, you may have to order Extended Function Store features to provide adequate control storage. Still other combinations may exceed the maximum control storage possible with all Extended Function Store features. Such combinations are invalid configurations. In these situations, you must forfeit feature(s) in order to reduce the control storage requirements to an amount not exceeding the maximum control storage possible.

Do the following procedural steps to determine which, if any, Extended Function Store features must be ordered for the model you have selected:

1. Select the Configuration Support option that contains the functions you want.

2. Refer to the appropriate figure of control storage requirements, and select the features and functions you want.

   a. Use Figure I-1 for a 3274 Model 1A.

   b. Use Figure I-2 for a 3274 Model 1C using SNA protocol.

   c. Use Figure I-3 for a 3274 Model 1C using BSC protocol.

   d. Use Figure I-4 for a 3274 Model 1D.

   e. Use Figure I-5 for a 3274 Model 51C using SNA protocol.

   f. Use Figure I-6 for a 3274 Model 51C using BSC protocol.

3. Determine the total Type C and total Type D storage required for the features and functions you selected in step 2.

4. Add the Type C and Type D totals to determine the total control storage required. If this total is less than 65,536, no Extended Function Store features are required and you can stop here. If the total is greater than 65,536, continue with step 5.

5. For Model 1A, 1C, or 1D, see Figure I-7. If you chose Configuration Support A or B, begin at Line 1 and work down. If you chose Configuration Support C, begin at Line 4 and work down. Stop at the first line that satisfies the control storage requirements you determined in steps 3 and 4. This line tells you the Extended Function Store features that your 3274 Model 1A, 1C, or 1D requires.

   For Model 51C, see Figure I-8. Begin at the top and work down. Stop at the first line that satisfies the control storage requirements you determined in

steps 3 and 4. This line tells you the Extended Function Store features that your 3274 Model 51C requires.

Models 21A, 21C, 21D, 31A, 31C, and 31D

After having selected the Configuration Support option and the desired special features, you will have to determine the control storage required. Some combinations of functions and features will exceed the basic control-storage capacity of the Model 21 control unit you have chosen. If the sum of the control storage requirements exceeds 65,536, a Model 21 control unit cannot be used and a Model 31 control unit is required. Note the special considerations for Models 31A and 31C/SNA in step 5 below.

Do the following procedural steps to determine the control storage requirements for the functions and features you have selected:

1. Determine which Configuration Support option contains the functions you want.

2. Refer to the appropriate figure of control storage requirements, and select the features and functions you want.

   a. Use Figure I-9 for a 3274 Model 21A.

   b. Use Figure I-10 for a 3274 Model 21C using SNA protocol.

   c. Use Figure I-11 for a 3274 Model 21C using BSC protocol.

   d. Use Figure I-12 for a 3274 Model 21D.

3. Determine the total storage requirements for the features and functions you selected in step 2.

4. If the total storage requirements calculated in step 3 are equal to or less than 65,536, the Model 21 can be used. If the storage requirements exceed 65,536, however, the Model 21 Control Unit cannot be used and a Model 31 Control Unit is required. If you determine that a Model 31A or a Model 31C/SNA is required, do step 5.

5. If you chose Configuration Support C (#9112) and either Model 31A or 31C/SNA, you must ensure that the combination of functions and features you select forms a valid configuration by doing the following:

   a. Refer to the appropriate figure of control storage requirements, and select the features and functions you want.

      1) Use Figure I-13 for a 3274 Model 31A.

      2) Use Figure I-14 for a 3274 Model 31C/SNA.

   b. Determine the total storage requirements for the features and functions you selected in step a.

   c. If the total storage requirements calculated in step b exceed 71,680, you must forfeit one or more features so that the total storage requirements do not exceed 71,680.

3274 Model 1A	Type C	Type D
Model 1A Base (including Copy) (Choose one)		
● Configuration Support A (#9110)	41,200	13,600
● Configuration Support B (#9111)	45,072	14,484
● Configuration Support C (#9112)	50,030	17,940
Category A terminals (Choose one)[2]		
● 1 to 8 terminals (included in base)	0	0
● 1 to 16 terminals	0	2,048
● 1 to 24 terminals	0	4,096
● 1 to 32 terminals	0	6,144
Keyboards on Category A terminals (Select all that apply, choosing at least one)[4]		
● Typewriter (3278/3279-#4621, 4624, 4627, 4628, 4640, 4651)	0	786[1]
● Data Entry (3278/3279-#4622)	0	786[1]
● Data Entry Keypunch Layout (3278/3279-#4623)	0	786[1]
● Text (3278/3279-#4629)	0	1,560
● APL (3278/3279-#4626, 4652)	0	1,560
Canadian French Keyboards (any)	500	150
● Typewriter (3278/3279-#4621, 4624, 4627, 4628, 4640, 4651)	0	1,042[1]
● Data Entry (3278/3279-#4622)	0	1,042[1]
● Data Entry Keypunch Layout (3278/3279-#4623)	0	1,042[1]
● APL (3278/3279-#4626, 4652)	0	1,816
Japanese Katakana Keyboards		
● Typewriter (3278/3279-#2715, 2717, 2719, 2708)	0	1,304
● Data Entry (3278/3279-#2716)	0	1,304
● APL (3278/3279-#2718, 2721)	0	2,072
IBM 3270 Personal Computer Attachment	3,200	300
Category B terminals (Choose one)[2,3]		
● 1 to 4 terminals	4,900	5,624
● 1 to 8 terminals	4,900	6,648
● 1 to 12 terminals	4,900	7,672
● 1 to 16 terminals	4,900	8,696
APL/Text Control Function (Choose one)		
● Configuration Support A or B	1,700	1,200
● Configuration Support C	0	0
3289 Text Print Control	0	512
Host-Loadable Printer Authorization Matrix	500	0
Between Bracket Printer Sharing	800	100
SCS Printer Support (3287-#9660, 9661)[5] (3230, 3262, 3268, and 3289-basic function)	1,600	100
Magnetic Reader Control (3278/3279-#4999) (Choose one)		
● 3275/3277-Compatible 10-Character Set	600	60
● Numeric and Alphanumeric Character Sets	1,630	316
3279 Color Convergence	4,296	1,198
The following are available with Configuration Support C only		
Structured Field and Attribute Processing (SFAP)[5]	4,950	950
Programmed Symbols (PS)	2,700	190
Decompression of PS Load Data	900	0
Extended Attribute Terminals (add 256 for each terminal): 3278/3287 with #3610; 3279-2B, 3B, S2B, and S3G; 3279-02X and 03X with #3850.	0	#x256

Figure I-1. 3274 Model 1A Control Storage Requirements

[1] Configuration Support A consideration only: If all three keyboard types (Typewriter, Data Entry, and Data Entry Keypunch Layout) are required on display stations attached to the 3274, add 1000 to the Type D storage requirements in addition to that listed.

[2] If the total type D requirement for Category A and Category B terminals exceeds 10,744, use 10,744.

[3] No customizing option or additional control storage is required to support the 3275/3277-compatible character set for the Operator Identification Card Reader (4600) on 3277 Display Stations (Category B terminals) attached to a 3274.

[4] Add the indicated amount for each keyboard type to be used.

[5] The SFAP function is also required when the SCS Support for SFAP feature (#9661) is to be used on the 3287 Printer Model 1, 1C, 2, or 2C. This function does not support ASCII or the 1970 Alternate Character Set codes for Austria/Germany, Denmark/Norway, Finland/Sweden, and Spain.

3274 Model 1C/SNA	Type C	Type D
Model 1C/SNA (including Copy) (Choose one) EBCDIC		
• Configuration Support A (#9110)	41,030	13,700
• Configuration Support B (#9111)	46,102	15,096
• Configuration Support C (#9112)	50,580	17,940
ASCII		
• Configuration Support A (#9110)	41,446	14,100
• Configuration Support B (#9111)	46,518	15,496
• Configuration Support C (#9112)	51,700	18,090
Category A terminals (Choose one)[2]		
• 1 to 8 terminals (included in base)	0	0
• 1 to 16 terminals	0	2,048
• 1 to 24 terminals	0	4,096
• 1 to 32 terminals	0	6,144
Keyboards on Category A terminals (Select all that apply, choosing at least one)[4]		
• Typewriter (3278/3279-#4621, 4624, 4627, 4628, 4640, 4651)	0	786[1]
• Data Entry (3278/3279-#4622)	0	786[1]
• Data Entry Keypunch Layout (3278/3279-#4623)	0	786[1]
• Text (3278/3279-#4629)	0	1,560
• APL (3278/3279-#4626, 4652)	0	1,560
Canadian French Keyboards (any)	450	150
• Typewriter (3278/3279-#4621, 4624, 4627, 4628, 4640, 4651)	0	1,042[1]
• Data Entry (3278/3279-#4622)	0	1,042[1]
• Data Entry Keypunch Layout (3278/3279-#4623)	0	1,042[1]
• APL (3278/3279-#4626, 4652)	0	1,816
Japanese Katakana Keyboards		
• Typewriter (3278/3279-#2715, 2717, 2719, 2708)	0	1,304
• Data Entry (3278/3279-#2716)	0	1,304
• APL (3278/3279-#2718, 2721)	0	2,072
IBM 3270 Personal Computer Attachment	3,200	300
Category B terminals (Choose one)[2,3]		
• 1 to 4 terminals	4,900	5,624
• 1 to 8 terminals	4,900	6,648
• 1 to 12 terminals	4,900	7,672
• 1 to 16 terminals	4,900	8,696
APL/Text Control Function (Choose one)		
• Configuration Support A or B	1,700	1,200
• Configuration Support C	0	0
3289 Text Printer Control	0	512
High Performance Communications Adapter (#6303)		
• Configuration Support A or B	600	-500
• Configuration Support C	600	+400
Host-Loadable Printer Authorization Matrix	500	0
Between Bracket Printer Sharing	800	100
SCS Printer Support[5] (3287-#9660,9661) (3230, 3262, 3268, and 3289-basic feature)	1,600	100

Figure I-2 (Part 1 of 2). 3274 Model 1C/SNA Control Storage Requirements

3274 Model 1C/SNA	Type C	Type D
Magnetic Reader Control (3278/3279-#4999) (Choose one) ● 3275/3277-Compatible 10-Character Set ● Numeric and Alphanumeric Character Sets	 600 1,630	 60 316
Encrypt/Decrypt (#3680)	3,200	2,000
3279 Color Convergence	4,296	1,198
The following are available with Configuration Support C only		
Structured Field and Attribute Processing (SFAP)[5]	4,950	950
Programmed Symbols (PS)	2,700	190
Decompression of PS Load Data	900	0
Extended Attribute Terminals (add 256 for each terminal): 3278/3287 with #3610; 3279-2B, 3B, S2B, and S3G; 3279-02X and 03X with #3850.	0	#x256

[1] Configuration Support A consideration only: If all three keyboard types (Typewriter, Data Entry, and Data Entry Keypunch Layout) are required on display stations attached to the 3274, add 1000 to the Type D storage requirements in addition to that listed.

[2] If the total Type D requirement for Category A and Category B terminals exceeds 10,744, use 10,744.

[3] No customizing option or additional control storage is required to support the 3275/3277-compatible character set for the Operator Identification Card Reader (4600) on 3277 Display Stations (Category B terminals) attached to a 3274.

[4] Add the indicated amount for each keyboard type to be used.

[5] The SFAP function is also required when the SCS Support for SFAP feature (#9661) is to be used on the 3287 Printer Model 1, 1C, 2, or 2C. This function does not support ASCII or the 1970 Alternate Character Set codes for Austria/Germany, Denmark/Norway, Finland/Sweden, and Spain.

Figure I-2 (Part 2 of 2). 3274 Model 1C/SNA Control Storage Requirements

3274 Model 1C/BSC	Type C	Type D
Model 1C/BSC (Choose one)		
EBCDIC		
• Configuration Support A (#9110)	38,000	13,800
• Configuration Support B (#9111)	41,872	14,684
• Configuration Support C (#9112)	47,150	22,200
ASCII		
• Configuration Support A (#9110)	38,000	14,500
• Configuration Support B (#9111)	41,872	15,384
• Configuration Support C (#9112)	48,650	22,900
Category A terminals (Choose one)[2]		
• 1 to 8 terminals (included in base)	0	0
• 1 to 16 terminals	0	2,048
• 1 to 24 terminals	0	4,096
• 1 to 32 terminals	0	6,144
Keyboards on Category A terminals		
(Select all that apply, choosing at least one)[4]		
• Typewriter (3278/3279-#4621, 4624, 4627, 4628, 4640, 4651)	0	786[1]
• Data Entry (3278/3279-#4622)	0	786[1]
• Data Entry Keypunch Layout (3278/3279-#4623)	0	786[1]
• Text (3278/3279-#4629)	0	1,560
• APL (3278/3279-#4626, 4652)	0	1,560
Canadian French Keyboards (any)	500	150
• Typewriter (3278/3279-#4621, 4624, 4627, 4628, 4640, 4651)	0	1,042[1]
• Data Entry (3278/3279-#4622)	0	1,042[1]
• Data Entry Keypunch Layout (3278/3279-#4623)	0	1,042[1]
• APL (3278/3279-#4626, 4652)	0	1,816
Japanese Katakana Keyboards		
• Typewriter (3278/3279-#2715, 2717, 2719, 2708)	0	1,304
• Data Entry (3278/3279-#2716)	0	1,304
• APL (3278/3279-#2718, 2721)	0	2,072
IBM 3270 Personal Computer Attachment	3,200	300
Category B terminals (Choose one)[2,3]		
• 1 to 4 terminals	4,700	1,724
• 1 to 8 terminals	4,700	2,748
• 1 to 12 terminals	4,700	3,772
• 1 to 16 terminals	4,700	4,796
APL/Text Control Function (Choose one)		
• Configuration Support A or B	2,200	4,700
• Configuration Support C	0	0
3289 Text Printer Control	0	512
Host-Loadable Printer Authorization Matrix	550	0
Copy (Print Key Function)	2,700	0

Figure I-3 (Part 1 of 2). 3274 Model 1C/BSC Control Storage Requirements

3274 Model 1C/BSC	Type C	Type D
Magnetic Reader Control (3278/3279-#4999) (Choose one) ● 3275/3277-Compatible 10-Character Set ● Numeric and Alphanumeric Character Sets	 600 1,630	 60 316
3279 Color Convergence	4,296	1,198
The following are available with Configuration Support C only		
Structured Field and Attribute Processing (SFAP)[5]	4,950	950
Programmed Symbols (PS)	2,700	9,610
Decompression of PS Load Data	900	0
Extended Attribute Terminals (add 256 for each terminal): 3278/3287 with #3610; 3279-2B, 3B, S2B, and S3G; 3279-02X and 03X with #3850.	0	#x256

[1] Configuration Support A consideration only: If all three keyboard types (Typewriter, Data Entry, and Data Entry Keypunch Layout) are required on display stations attached to the 3274, add 1000 to the Type D storage requirements in addition to that listed.

[2] If the total Type D requirement for Category A and Category B terminals exceeds 6844, use 6844.

[3] No customizing option or additional control storage is required to support the 3275/3277-compatible character set for the Operator Identification Card Reader (4600) on 3277 Display Stations (Category B terminals) attached to a 3274.

[4] Add the indicated amount for each keyboard type to be used.

[5] This function does not support ASCII or the 1970 Alternate Character Set codes for Austria/Germany, Denmark/Norway, Finland/Sweden, and Spain.

Figure I-3 (Part 2 of 2). 3274 Model 1C/BSC Control Storage Requirements

3274 Model 1D	Type C	Type D
Model 1D (including copy) (Choose one) ● Configuration Support A (#9110) ● Configuration Support B (#9111) ● Configuration Support C (#9112)	 34,500 38,372 39,720	 17,000 17,884 24,900
Category A terminals (Choose one)[2] ● 1 to 8 terminals (included in base) ● 1 to 16 terminals ● 1 to 24 terminals ● 1 to 32 terminals	 0 0 0 0	 0 2,048 4,096 6,144
Keyboards on Category A terminals (Select all that apply, choosing at least one)[4] ● Typewriter (3278/3279-#4621, 4624, 4627, 4628, 4640, 4651) ● Data Entry (3278/3279-#4622) ● Data Entry Keypunch Layout (3278/3279-#4623) ● Text (3278/3279-#4629) ● APL (3278/3279-#4626, 4652) Canadian French Keyboards (any) ● Typewriter (3278/3279-#4621, 4624, 4627, 4628, 4640, 4651) ● Data Entry (3278/3279-#4622) ● Data Entry Keypunch Layout (3278/3279-#4623) ● APL (3278/3279-#4626, 4652) Japanese Katakana Keyboards ● Typewriter (3278/3279-#2715, 2717, 2719, 2708) ● Data Entry (3278/3279-#2716) ● APL (3278/3279-#2718, 2721)	 0 0 0 0 0 500 0 0 0 0 0 0 0	 786[1] 786[1] 786[1] 1,560 1,560 150 1,042[1] 1,042[1] 1,042[1] 1,816 1,304 1,304 2,072
IBM 3270 Personal Computer Attachment	3,200	300
Category B terminals (Choose one)[2,3] ● 1 to 4 terminals ● 1 to 8 terminals ● 1 to 12 terminals ● 1 to 16 terminals	 4,300 4,300 4,300 4,300	 3,724 4,748 5,772 6,796
APL/Text Control Function (Choose one) ● Configuration Support A or B ● Configuration Support C	 1,700 0	 4,600 0
Copy (Print Key Function)	2,700	0
3289 Text Print Control	0	512
Host-Loadable Printer Authorization Matrix	550	0
Magnetic Reader Control (3278/3279-#4999) (Choose one) ● 3275/3277-Compatible 10-Character Set ● Numeric and Alphanumeric Character Sets	 600 1,120	 60 316

Figure I-4 (Part 1 of 2). 3274 Model 1D Control Storage Requirements

3274 Model 1D	Type C	Type D
3279 Color Convergence	4,296	1,198
The following are available with Configuration Support C only		
Structured Field and Attribute Processing (SFAP)[5]	4,950	950
Programmed Symbols (PS)	2,700	190
Decompression of PS Load Data	900	0
Extended Attribute Terminals (add 256 for each terminal): 3278/3287 with #3610; 3279-2B, 3B, S2B, and S3G; 3279-02X and 03X with #3850.	0	#x256

[1] Configuration Support A consideration only: If all three keyboard types (Typewriter, Data Entry, and Data Entry Keypunch Layout) are required on display stations attached to the 3274, add 1000 to the Type D storage requirements in addition to that listed.

[2] If the total Type D requirement for Category A and Category B terminals exceeds 8844, use 8844.

[3] No customizing option or additional control storage is required to support the 3275/3277-compatible character set for the Operator Identification Card Reader (4600) on 3277 Display Stations (Category B terminals) attached to a 3274.

[4] Add the indicated amount for each keyboard type to be used.

[5] This function does not support ASCII or the 1970 Alternate Character Set codes for Austria/ Germany, Denmark/Norway, Finland/Sweden, and Spain.

Figure I-4 (Part 2 of 2). 3274 Model 1D Control Storage Requirements

3274 Model 51C/SNA	Type C	Type D
Model 51C/SNA (including copy) (Choose one)		
EBCDIC		
● Configuration Support A (#9110)	41,030	13,700
● Configuration Support B (#9111)	46,102	15,096
● Configuration Support C (#9112)	50,580	17,940
ASCII		
● Configuration Support A (#9110)	41,446	14,100
● Configuration Support B (#9111)	46,518	15,496
● Configuration Support C (#9112)	51,700	18,090
Keyboards on Category A terminals		
(Select all that apply, choosing at least one)[3]		
● Typewriter (3278/3279–#4621, 4624, 4627, 4628, 4640, 4651)	0	786[1]
● Data Entry (3278/3279–#4622)	0	786[1]
● Data Entry Keypunch Layout (3278/3279–#4623)	0	786[1]
● Text (3278/3279–#4629)	0	1,560
● APL (3278/3279–#4626, 4652)	0	1,560
Canadian French Keyboards (any)	450	150
● Typewriter (3278/3279–#4621, 4624, 4627, 4628, 4640, 4651)	0	1,042[1]
● Data Entry (3278/3279–#4622)	0	1,042[1]
● Data Entry Keypunch Layout (3278/3279–#4623)	0	1,042[1]
● APL (3278/3279–#4626, 4652)	0	1,816
Japanese Katakana Keyboards		
● Typewriter (3278/3279–#2715, 2717, 2719, 2708)	0	1,304
● Data Entry (3278/3279–#2716)	0	1,304
● APL (3278/3279–#2718, 2721)	0	2,072
IBM 3270 Personal Computer Attachment	3,200	300
Category B terminals[2]	4,900	5,624
APL/Text Control Function (Choose one)		
● Configuration Support A or B	1,700	1,200
● Configuration Support C	0	0
3289 Text Print Control	0	512
High Performance Communications Adapter (#6303)		
● Configuration Support A or B	600	–500
● Configuration Support C	600	+400
Host-Loadable Printer Authorization Matrix	500	0
Between Bracket Printer Sharing	800	100
SCS Printer Support[4] (3287–#9660, 9661) (3230, 3262, 3268, and 3289-basic feature)	1,600	100
Magnetic Reader Control (3278/3279–#4999) (Choose one)		
● 3275/3277-Compatible 10-Character Set	600	60
● Numeric and Alphanumeric Character Sets	1,630	316
Encrypt/Decrypt (#3680)	3,200	2,000

Figure I-5 (Part 1 of 2). 3274 Model 51C/SNA Control Storage Requirements

3274 Model 51C/SNA	Type C	Type D
3279 Color Convergence	4,296	1,198
The following are available with Configuration Support C only		
Structured Field and Attribute Processing (SFAP) (EBCDIC only)	4,950	950
Programmed Symbols (PS)	2,700	190
Decompression of PS Load Data	900	0
Extended Attribute Terminals (add 256 for each terminal) (3278/3287-#3610/3279 Model 2B or 3B)	0	#x256
Loop Attachment (EBCDIC only)	3,200	850
X.21 Switched Network Operation	6,500	2,100

[1] Configuration Support A consideration only: If all three keyboard types (Typewriter, Data Entry, and Data Entry Keypunch Layout) are required on display stations attached to the 3274, add 1000 to the Type D storage requirements in addition to that listed.

[2] No customizing option or additional control storage is required to support the 3275/3277-compatible character set for the Operator Identification Card Reader (4600) on 3277 Display Stations (Category B terminals) attached to a 3271.

[3] Add the indicated amount for each keyboard type to be used.

[4] The SFAP function is also required when the SCS Support for SFAP feature (#9661) is to be used on the 3287 Printer Model 1, 1C, 2, or 2C.

Figure I-5 (Part 2 of 2). 3274 Model 51C/SNA Control Storage Requirements

3274 Model 51C/BSC	Type C	Type D
Model 51C (Choose one)		
EBCDIC		
• Configuration Support A (#9110)	38,000	13,800
• Configuration Support B (#9111)	41,872	14,684
• Configuration Support C (#9112)	47,150	22,200
ASCII		
• Configuration Support A (#9110)	38,000	14,500
• Configuration Support B (#9111)	41,872	15,384
• Configuration Support C (#9112)	48,650	22,900
Keyboards on Category A terminals		
(Select all that apply, choosing at least one)[3]		
• Typewriter (3278/3279-#4621, 4624, 4627, 4628, 4640, 4651)	0	786[1]
• Data Entry (3278/3279-#4622)	0	786[1]
• Data Entry Keypunch Layout (3278/3279-#4623)	0	786[1]
• Text (3278/3279-#4629)	0	1,560
• APL (3278/3279-#4626, 4652)	0	1,560
Canadian French Keyboards (any)	450	150
• Typewriter (3278/3279-#4621, 4624, 4627, 4628, 4640, 4651)	0	1,042[1]
• Data Entry (3278/3279-#4622)	0	1,042[1]
• Data Entry Keypunch Layout (3278/3279-#4623)	0	1,042[1]
• APL (3278/3279-#4626, 4652)	0	1,816
Japanese Katakana Keyboards		
• Typewriter (3278/3279-#2715, 2717, 2719, 2708)	0	1,304
• Data Entry (3278/3279-#2716)	0	1,304
• APL (3278/3279-#2718, 2721)	0	2,072
IBM 3270 Personal Computer Attachment	3,200	300
Category B terminals[2]	4,700	1,724
APL/Text Control Function (Choose one)		
• Configuration Support A or B	2,200	4,700
• Configuration Support C	0	0
3289 Text Print Control	0	512
Host-Loadable Printer Authorization Matrix	550	0
Copy (Print Key Function)	2,700	0
Magnetic Reader Control (3278/3279-#4999) (Choose one)		
• 3275/3277–Compatible 10-Character Set	600	60
• Numeric and Alphanumeric Character Sets	1,630	316
3279 Color Convergence	4,296	1,198
The following are available with Configuration Support C only		
Structured Field and Attribute Processing (SFAP) (EBCDIC only)	4,950	950
Programmed Symbols (PS)	2,700	9,610
Decompression of PS Load Data	900	0
Extended Attribute Terminals (add 256 for each terminal): 3278/3287 with #3610; 3279-2B, 3B, S2B, and S2G; 3279-02X and 03X with #3850.	0	#x256

[1] Configuration Support A consideration only: If all three keyboard types (Typewriter, Data Entry, and Data Entry Keypunch Layout) are required on display stations attached to the 3274, add 1000 to the Type D storage requirements in addition to that listed.

[2] No customizing option or additional control storage is required to support the 3275/3277-compatible character set for the Operator Identification Card Reader (4600) on 3277 Display Stations (Category B terminals) attached to a 3274.

[3] Add the indicated amount for each keyboard type to be used.

Figure I-6. 3274 Model 51C/BSC Control Storage Requirements

Line	Factors	Storage Size	Feature Codes
1	Type C + Type D	$\leq$ 65,536	None
2	Type C + Type D and Type C and Type D	> 65,536 $\leq$ 49,152 $\leq$ 32,768	1801 and 3622
3	Type C + Type D and Type C and Type D	> 65,536 $\leq$ 49,152 $\leq$ 49,152	1801, 3622, and 3627
4	Type C + Type D and Type C and Type D	> 65,536 $\leq$ 65,536 $\leq$ 32,768	1801, 3622, and 3625, or 1801 and 3623
5	Type C + Type D and Type C and Type D	> 65,536 $\leq$ 65,536 $\leq$ 49,152	1801, 3622, 3625, and 3627, or 1801, 3623, and 3627
6	Type C + Type D and Type C and Type D	> 65,536 $\leq$ 65,536 > 49,152	1801, 3622, 3625, and 3628, or 1801, 3623, and 3628
7	Type C and Type C and Type D	> 65,536 $\leq$ 71,680 Any	1801, 3622, 3625, and 3628, or 1801, 3623, and 3628
8	Type C	> 71,680	Invalid Configuration

Figure I-7. 3274 Models 1A, 1C, and 1D Extended Function Store Features

Factors	Storage Size	Feature Codes
Type C + Type D	$\leq$ 65,536	None
Type C + Type D and Type C and Type D	> 65,536 $\leq$ 65,536 $\leq$ 32,768	1802 and 3630
Type C + Type D and Type C and Type D	> 65,536 $\leq$ 65,536 > 32,768	1802 and 3632 (or 1802, 3630, and 3631 — Field Upgrade Only)
Type C and Type C and Type D	> 65,536 $\leq$ 71,680 Any	1802 and 3632 (or 1802, 3630, and 3631 — Field Upgrade Only)
Type C	> 71,680	Invalid Configuration

Figure I-8. 3274 Model 51C Extended Function Store Features

3274 Model 21A	Storage Requirements
Model 21A (including Copy) (Choose one) ● Configuration Support A (#9110) ● Configuration Support B (#9111)	 54,800 59,556
Category A terminals (Choose one) ● 1 to 8 terminals (included in base) ● 1 to 16 terminals ● 1 to 24 terminals ● 1 to 32 terminals	 0 2,048 4,096 6,144
Keyboards on Category A terminals (Select all that apply, choosing at least one)[2] ● Typewriter (3278/3279 -#4621, 4627) ● Data Entry (3278/3279-#4622) ● Data Entry Keypunch Layout (3278/3279-#4623) ● Text (3278/3279-#4629) ● APL (3278/3279-#4626) Canadian French Keyboards (any) ● Typewriter (3278/3279-#4621, 4624, 4627, 4628) ● Data Entry (3278/3279-#4622) ● Data Entry Keypunch Layout (3278/3279-#4623) ● APL (3278/3279-#4626) Japanese Katakana Keyboards ● Typewriter (3278/3279-#2715, 2717) ● Data Entry (3278/3279-#2716) ● APL (3278/3279-#2718)	 786[1] 786[1] 786[1] 1,560 1,560 650 1,042[1] 1,042[1] 1,042[1] 1,816 1,304 1,304 2,072
IBM 3270 Personal Computer Attachment	3,500
APL/Text Control Function	2,900
3289 Text Print Control	512
Host-Loadable Printer Authorization Matrix	500
Between Bracket Printer Sharing	900
SCS Printer Support (3287-#9660) (3230, 3262, 3268, and 3289-basic function)	1,700
Magnetic Reader Control (3278/3279-#4999) (Choose one) ● 3275/3277-Compatible 10-Character Set ● Numeric and Alphanumeric Character Sets	 660 1,946
3279 Color Convergence	5,494

[1] Configuration Support A consideration only: If all three keyboard types (Typewriter, Data Entry, and Data Entry Keypunch Layout) are required on display stations attached to the 3274, add 1000 to the storage requirements in addition to that listed.

[2] Add the indicated amount for each keyboard type to be used.

Figure I-9. 3274 Model 21A Control Storage Requirements

3274 Model 21C/SNA	Storage Requirements
Model 21C/SNA (including Copy) (Choose one) EBCDIC • Configuration Support A (#9110) • Configuration Support B (#9111) ASCII • Configuration Support A (#9110) • Configuration Support B (#9111)	 54,730 61,198 55,546 62,014
Category A Terminals (Choose one) • 1 to 8 terminals (included in base) • 1 to 16 terminals • 1 to 24 terminals • 1 to 32 terminals	 0 2,048 4,096 6,144
Keyboards on Category A terminals (Select all that apply, choosing at least one)[2] • Typewriter (3278/3279-#4621, 4624, 4627, 4628) • Data Entry (3278/3279-#4622) • Data Entry Keypunch Layout (3278/3279-#4623) • Text (3278/3279-#4629) • APL (3278/3279-#4626) Canadian French Keyboards (any) • Typewriter (3278/3279-#4621, 4624, 4627, 4628) • Data Entry (3278/3279-#4622) • Data Entry Keypunch Layout (3278/3279-#4623) • APL (3278/3279-#4626) Japanese Katakana Keyboards • Typewriter (3278/3279-#2715, 2717) • Data Entry (3278/3279-#2716) • APL (3278/3279-#2718, 2721)	 786[1] 786[1] 786[1] 1,560 1,560 600 1,042[1] 1,042[1] 1,042[1] 1,816 1,304 1,304 2,072
IBM 3270 Personal Computer Attachment	3,500
APL/Text Control Function	2,900
3289 Text Print Control	512
High Performance Communications Adapter (#6303)	100
Host-Loadable Printer Authorization Matrix	500
Between Bracket Printer Sharing	900
SCS Printer Support (3287-#9660) (3230, 3262, 3268, and 3289-basic feature)	1,700
Magnetic Reader Control (3278/3279-#4999) (Choose one) • 3275/3277-Compatible 10-Character Set • Numeric and Alphanumeric Character Sets	 660 1,946
Encrypt/Decrypt (#3680)	5,200
3279 Color Convergence	5,494

[1] Configuration Support A consideration only: If all three keyboard types (Typewriter, Data Entry, and Data Entry Keypunch Layout) are required on display stations attached to the 3274, add 1000 to the storage requirements in addition to that listed.

[2] Add the indicated amount for each keyboard type to be used.

Figure I-10. 3274 Model 21C/SNA Control Storage Requirements

3274 Model 21C/BSC	Storage Requirements
Model 21C/BSC (Choose one) EBCDIC	
• Configuration Support A (#9110)	51,800
• Configuration Support B (#9111)	56,556
ASCII	
• Configuration Support A (#9110)	52,500
• Configuration Support B (#9111)	57,256
Category A Terminals (Choose one)[3]	
• 1 to 8 terminals (included in base)	0
• 1 to 16 terminals	2,048
• 1 to 24 terminals	4,096
• 1 to 32 terminals	6,144
Keyboards on Category A terminals (Select all that apply, choosing at least one)[4]	
• Typewriter (3278/3279-#4621, 4624, 4627, 4628)	786[1]
• Data Entry (3278/3279-#4622)	786[1]
• Data Entry Keypunch Layout (3278/3279-#4623)	786[1]
• Text (3278/3279-#4629)	1,560
• APL (3278/3279-#4626)	1,560
Canadian French Keyboards (any)	650
• Typewriter (3278/3279-#4621, 4624, 4627, 4628)	1,042[1]
• Data Entry (3278/3279-#4622)	1,042[1]
• Data Entry Keypunch Layout (3278/3279-#4623)	1,042[1]
• APL (3278/3279-#4626)	1,816
Japanese Katakana Keyboards	
• Typewriter (3278/3279-#2715, 2717)	1,304
• Data Entry (3278/3279-#2716)	1,304
• APL (3278/3279-#2718)	2,072
IBM 3270 Personal Computer Attachment	3,500
Category B terminals (Choose one)[2,3]	
• 1 to 4 terminals	6,424
• 1 to 8 terminals	7,448
• 1 to 12 terminals	8,472
• 1 to 16 terminals	9,496
APL/Text Control Function	6,900
3289 Text Print Control	512
Host-Loadable Printer Authorization Matrix	550
Copy (Print Key Function)	2,700
Magnetic Reader Control (3278/3279-#4999) (Choose one)	
• 3275/3277-Compatible 10-Character Set	660
• Numeric and Alphanumeric Character Sets	1,436
3279 Color Convergence	5,494

[1] Configuration Support A consideration only: If all three keyboards (Typewriter, Data Entry, and Data Entry Keypunch Layout) are required on display stations attached to the 3274, add 1000 to the storage requirements in addition to that listed.

[2] No customizing option or additional control storage is required to support the 3275/3277-compatible character set for the Operator Identification Card Reader (4600) on 3277 Display Stations (Category B terminals) attached to a 3274.

[3] If the total requirement for Category A and Category B terminals exceeds 11,544, use 11,544.

[4] Add the indicated amount for each keyboard type to be used.

Figure I-11. 3274 Model 21C/BSC Control Storage Requirements

3274 Model 21D	Storage Requirements
Model 21D (Choose one) • Configuration Support A (#9110) • Configuration Support B (#9111)	 51,500 56,256
Category A Terminals (Choose one)[3] • 1 to 8 terminals (included in base) • 1 to 16 terminals • 1 to 24 terminals • 1 to 32 terminals	 0 2,048 4,096 6,144
Keyboards on Category A terminals (Select all that apply, choosing at least one)[4] • Typewriter (3278/3279 - #4621, 4627) • Data Entry (3278/3279-#4622) • Data Entry Keypunch Layout (3278/3279-#4623) • Text (3278/3279-#4629) • APL (3278/3279-#4626) Canadian French Keyboards (any) • Typewriter (3278/3279-#4621, 4624, 4627, 4628) • Data Entry (3278/3279-#4622) • Data Entry Keypunch Layout (3278/3279-#4623) • APL (3278/3279-#4626) Japanese Katakana Keyboards • Typewriter (3278/3279-#2715, 2717) • Data Entry (3278/3279-#2716) • APL (3278/3279-#2718)	 786[1] 786[1] 786[1] 1,560 1,560 600 1,042[1] 1,042[1] 1,042[1] 1,816 1,304 1,304 2,072
IBM 3270 Personal Computer Attachment	3,500
Category B terminals (Choose one)[2,3] • 1 to 4 terminals • 1 to 8 terminals • 1 to 12 terminals • 1 to 16 terminals	 8,024 9,048 10,072 11,096
APL/Text Control Function	6,300
Copy (Print Key Function)	2,700
3289 Text Print Control	512
Host-Loadable Printer Authorization Matrix	550
Magnetic Reader Control (3278/3279-#4999) (Choose one) • 3275/3277-Compatible 10-Character Set • Numeric and Alphanumeric Character Sets	 660 1,436
3279 Color Convergence	5,494

[1] Configuration Support A consideration only: If all three keyboard types (Typewriter, Data Entry, and Data Entry Keypunch Layout) are required on display stations attached to the 3274, add 1000 to the storage requirements in addition to that listed.

[2] No customizing option or additional control storage is required to support the 3275/3277-compatible character set for the Operator Identification Card Reader (4600) on 3277 Display Stations (Category B terminals) attached to a 3274.

[3] If the total requirement for Category A and Category B terminals exceeds 13,144, use 13,144.

[4] Add the indicated amount for each keyboard type to be used.

Figure I-12. 3274 Model 21D Control Storage Requirements

3274 Model 31A	Storage Requirements
Configuration Support C	50,030
IBM 3270 Personal Computer Attachment	3,500
Category B terminals	4,900
Host-Loadable Printer Authorization Matrix	500
Between Bracket Printer Sharing	800
SCS Printer Support (3287 - #9660, 9661)[1] (3230, 3262, 3268, and 3289-basic feature)	1,600
Magnetic Reader Control (3278/3279-#4999) (Choose one) ● 3275/3277-Compatible 10-Character Set ● Numeric and Alphanumeric Character Sets	600 1,630
3279 Color Convergence	4,296
Structured Field and Attribute Processing (SFAP)[2]	4,950
Programmed Symbols (PS)	2,700
Decompression of PS Load Data	900
Canadian French Keyboards (any)	500

[1]The SFAP function is also required when the SCS Support for SFAP feature (#9661) is to be used on the 3287 Printer Model 1, 1C, 2, or 2C.

[2]This function does not support ASCII or the 1970 Alternate Character Set codes for Austria/Germany, Denmark/Norway, Finland/Sweden, and Spain.

Figure I-13. 3274 Model 31A Control Storage Requirements

3274 Model 31C/SNA	Storage Requirements
Configuration Support C	50,580
IBM 3270 Personal Computer Attachment	3,500
Category B terminals	4,900
Host-Loadable Printer Authorization Matrix	500
Between Bracket Printer Sharing	800
SCS Printer Support (3287 - #9660, 9661)[1] (3230, 3262, 3268 and 3289-basic feature)	1,600
Magnetic Reader Control (3278/3279 -#4999) (Choose one) ● 3275/3277-Compatible 10-Character Set ● Numeric and Alphanumeric Character Sets	 600 1,630
3279 Color Convergence	4,296
Structured Field and Attribute Processing (SFAP)[2] (EBCDIC only)	4,950
Programmed Symbols (PS)	2,700
Decompression	900
High Performance Communications Adapter (#6303)	600
Encrypt/Decrypt (#3680)	3,200
Canadian French Keyboards (any)	450
X.21 Switched Network Operation	6,500

[1]The SFAP function is also required when the SCS Support for SFAP feature (#9661) is to be used on the 3287 Printer Model 1, 1C, 2, or 2C.

[2]This function does not support ASCII or the 1970 Alternate Character Set codes for Austria/Germany, Denmark/Norway, Finland/Sweden, and Spain.
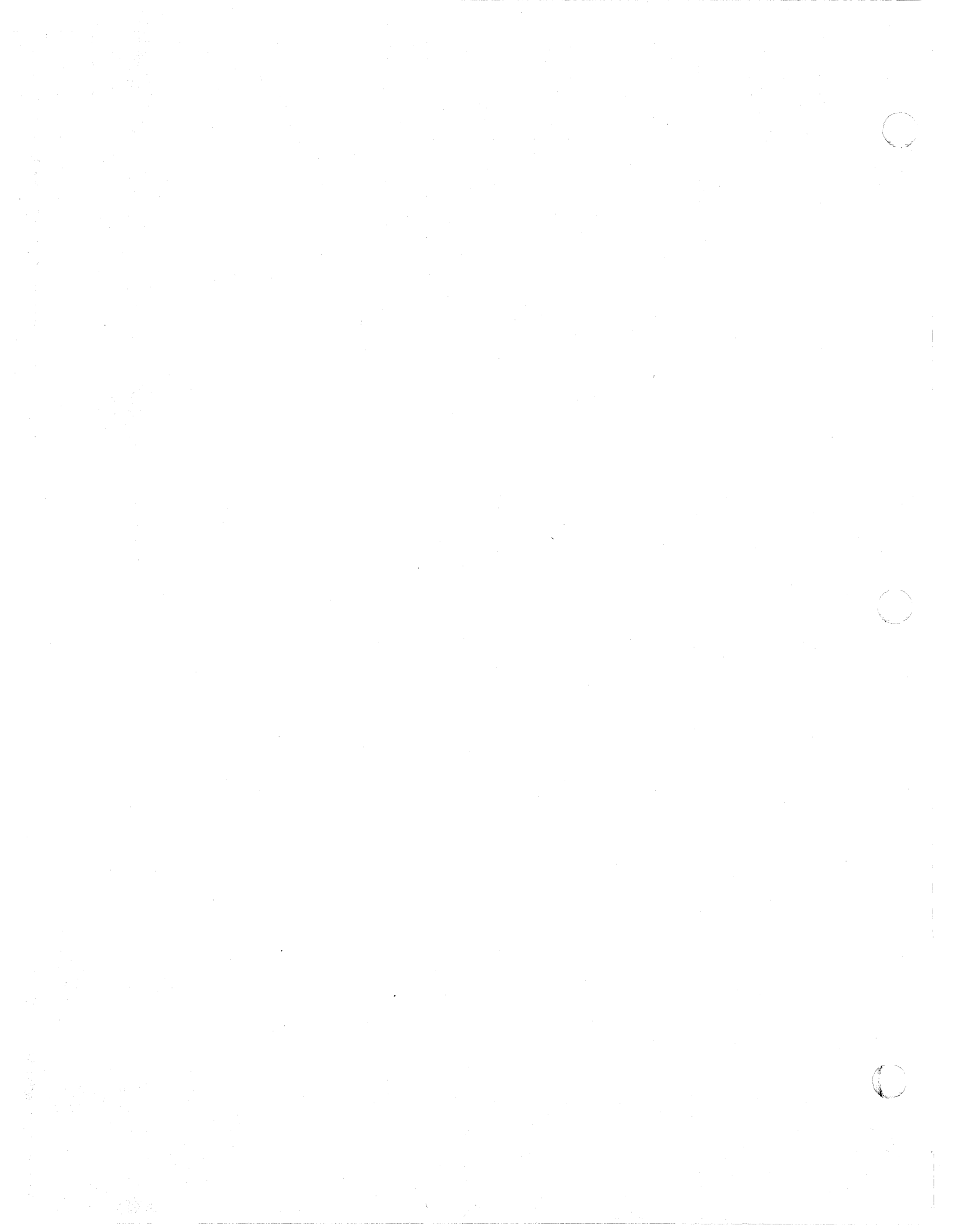
Figure I-14. 3274 Model 31C/SNA Control Storage Requirements

|Appendix J. Multiple Interactive Screen Definition — Sequence Number 171

Sequence number 171 allows you to define the Multiple Interactive Screen (MIS) configuration you will be using with your 3290 Information Panel Display Stations. You can specify none, two, three, four, or five terminal addresses. When defining MIS, you must also define the port address on which the first MIS display station is connected. This cannot be port 0. All remaining display stations that will use MIS *must* be connected to the next sequential ports following the one specified as the first MIS port. Similarly, the MIS designations will be assigned, within the 3274, in ascending sequential order. As shown in the example in Figure J-1, two 3278 Display Stations are attached to ports 00 and 01, respectively. The first MIS 3290 is attached to port 02 and the remaining three 3290s are attached consecutively to ports 03, 04, and 05. Your response to sequence number 171, then would be 02 01 02 01 00, where:

02 = Port to which the first MIS 3290 is attached to the 3274.

01 = One two-screen MIS 3290 is attached to port 02.

02 = Two three-screen MIS 3290s are attached to ports 03 and 04, respectively.

01 = One four-screen MIS 3290 is attached to port 05.

00 = No five-screen MIS 3290s are attached to the 3274.

When using MIS, sequence numbers 112 and 170 must be compatible with sequence number 171. It is recommended that the response to sequence number 112 (Number of Category A devices) be the exact number of physical devices attached to the 3274. (Category B devices are not allowed with 3290s. Sequence number 111 is not used.) In the above example, you have two 3278 Display Stations attached to ports 00 and 01, respectively, and four 3290s attached to ports 02, 03, 04, and 05, respectively. This gives you a total of six Category A devices. Your response to sequence number 112, therefore, is 6.

Your response to sequence number 170 (3290 Display Stations attached) must be 1, indicating that you do have 3290 Display Stations attached. If you respond 0 to sequence number 170, 3290 Display Stations will not operate on the 3274.

When using SNA protocol, you can define up to 128 MISs. When using a non-SNA protocol, such as BSC, or local non-SNA, only 32 MISs can be defined.

It is possible to address up to five different applications with MIS. Physically, it is only possible to display these applications in a one-, two-, or four-panel screen format, as is shown in Figure J-2.

These one-, two-, or four-panel screen formats are combined, as is shown in Figure J-3 to produce the two through five MIS configurations allowed in sequence number 171.

3290
(4 Screens)

P | K
M | L

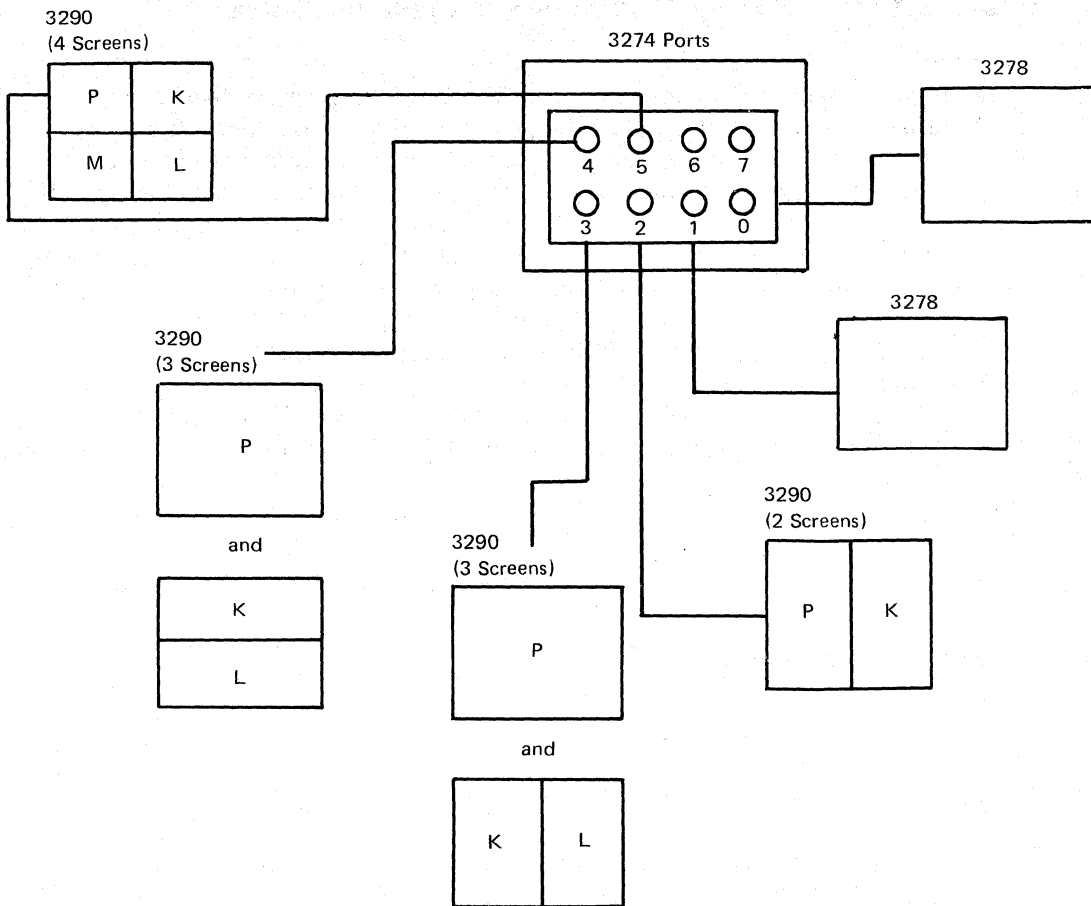3274 Ports
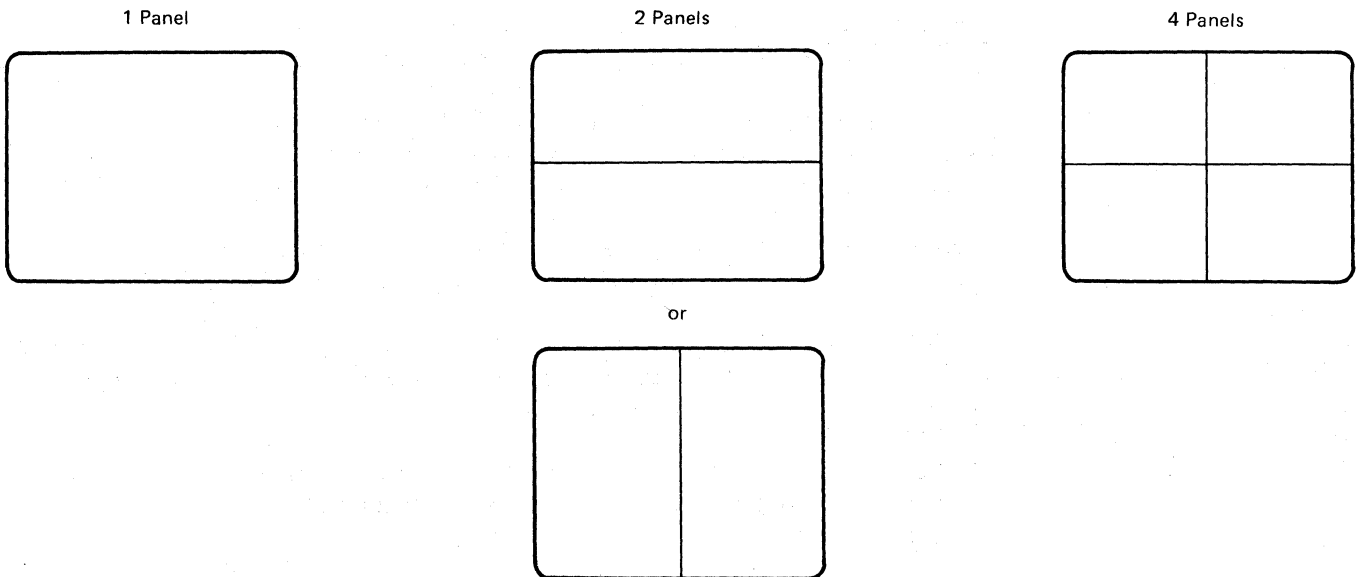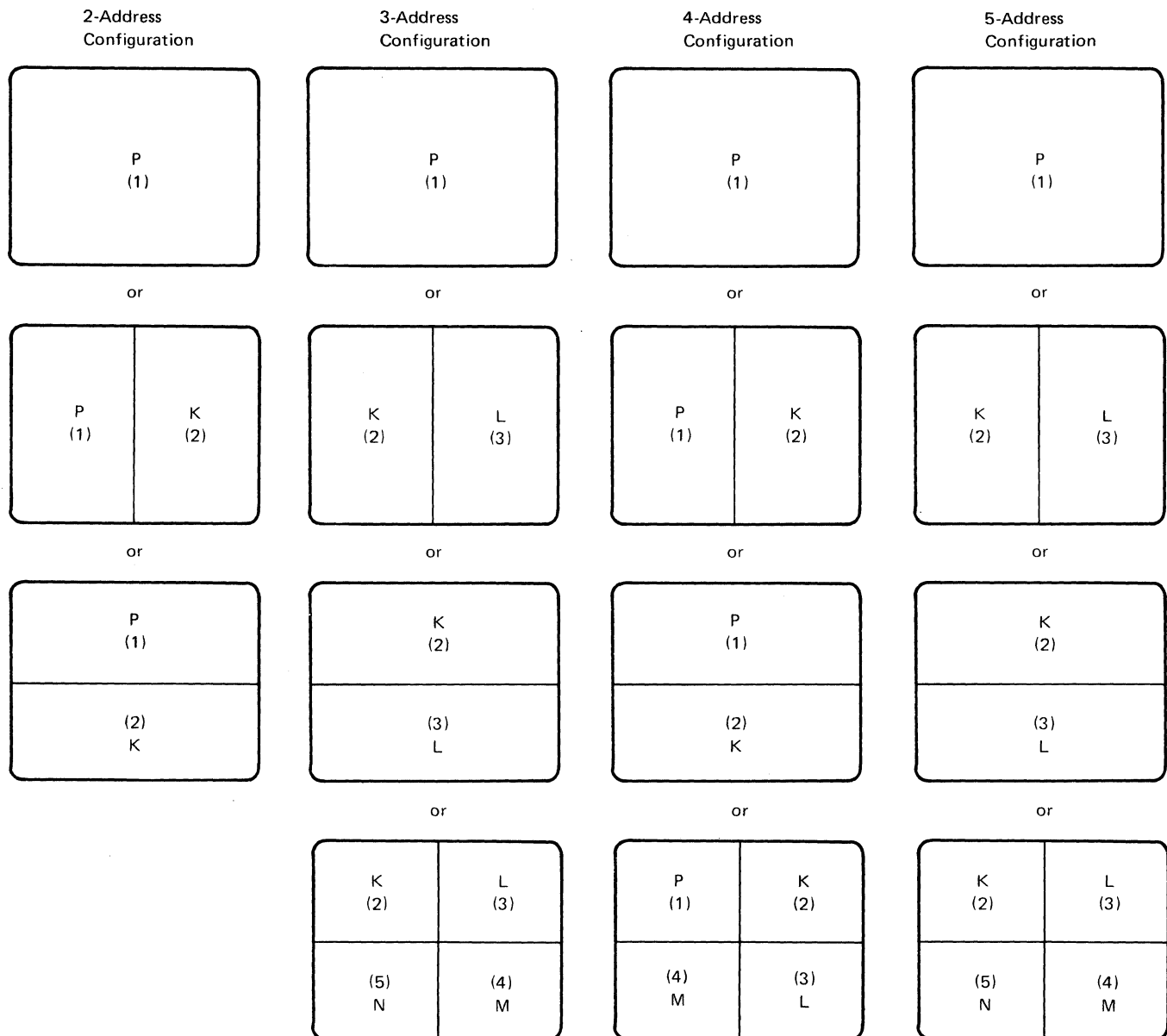
4 5 6 7
3 2 1 0

3278

3278

3290
(3 Screens)

P

and

K

L

3290
(3 Screens)

P

and

K | L

3290
(2 Screens)

P | K

Figure J-1. Example MIS Configuration

1 Panel

2 Panels

or

4 Panels

Figure J-2. Possible Multiple-Screen Formats

2-Address Configuration	3-Address Configuration	4-Address Configuration	5-Address Configuration
P (1)	P (1)	P (1)	P (1)
or	or	or	or
P (1) | K (2)	K (2) | L (3)	P (1) | K (2)	K (2) | L (3)
or	or	or	or
P (1) / (2) K	K (2) / (3) L	P (1) / (2) K	K (2) / (3) L
	or	or	or
	K (2) | L (3) / (5) N | (4) M	P (1) | K (2) / (4) M | (3) L	K (2) | L (3) / (5) N | (4) M

P = Primary Terminal. Addressed through the port to which the physical display station is attached.

K through N = Secondary Terminals. Addressed through logical ports that cannot have physical display stations attached.

Note: *The SNA protocol is allowed a total of 128 primary and secondary terminal addresses. Non-SNA protocols are allowed a total of 32 primary and sceondary terminal addresses.*

Figure J-3. Possible Multiple Screen Configurations

Your response to sequence number 112 (Number of Category A devices) defines the number of physical devices attached to the 3274. Your response to sequence number 171 (Multiple Interactive Screens), however, as in the example in Figure J-1, implies that logically, there are more devices than you specified in sequence number 112. MIS deals with two types of devices:

1. "Primary" device — the physical display station that is actually attached to the 3274 ports, as explained above.

2. "Secondary" device — shares the screen of a primary device but is treated internally by the 3274 as a separate display station with its own address.

The secondary device must have a port address assigned to it if it is to communicate with the host. The 3274 assigns these port addresses by beginning where the physical devices leave off. Figure J-4 is an extension of the example in Figure J-1. As shown in Figure J-4:

- The two-screen MIS 3290 has its primary device physically attached and addressed through port 02. Because port 05 is the last port to which a physical device (in this example, the four-screen MIS 3290) is attached, the two-screen display station has its secondary device logically attached and addressed through port 06.

- The first three-screen MIS 3290 has its primary device physically attached and addressed through port 03 and its two secondary devices logically attached and addressed through ports 07 and 08, respectively.

- The second three-screen MIS 3290 has its primary device physically attached and addressed through port 04 and its two secondary devices logically attached and addressed through ports 09 and 10, respectively.

- The four-screen MIS 3290 has its primary device physically attached and addressed through port 05 and its three secondary devices logically attached and addressed through ports 11, 12, and 13, respectively.

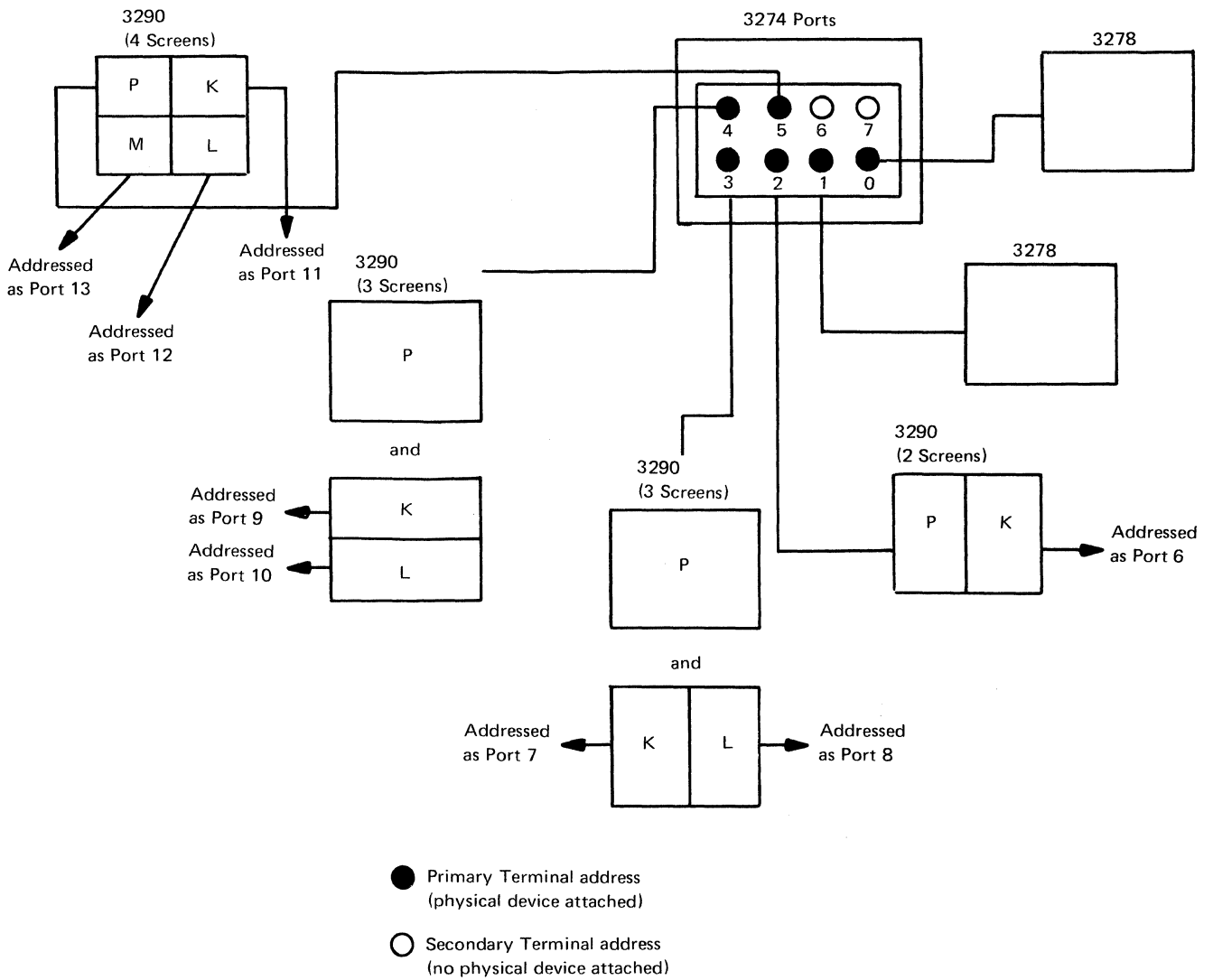Figure J-5 shows how the host would address the devices in this example when an SNA protocol is used.

Figure J-4. Example of How the 3274 Views MIS Addressing

Port

3278

0

3278

1

Host Terminal Control Table

3290 (MIS)

3274
Port

LU1	LU	LOCADDR=2,	DLOGMOD=T3278M2	0
LU2	LU	LOCADDR=3,	DLOGMOD=T3278M2	1
[2] LU3	LU	LOCADDR=4,	DLOGMOD=Txxxx	2
[2] LU4	LU	LOCADDR=5,	DLOGMOD=Txxxx	3
[3] LU5	LU	LOCADDR=6,	DLOGMOD=Txxxx	4
[4] LU6	LU	LOCADDR=7,	DLOGMOD=Txxxx	5
[1] LU7	LU	LOCADDR=8,	DLOGMOD=T3278Mx	6
[2] LU8	LU	LOCADDR=9,	DLOGMOD=T3278Mx	7
[2] LU9	LU	LOCADDR=10,	DLOGMOD=T3278Mx	8
[3] LU10	LU	LOCADDR=11,	DLOGMOD=T3278Mx	9
[3] LU11	LU	LOCADDR=12,	DLOGMOD=T3278Mx	10
[4] LU12	LU	LOCADDR=13,	DLOGMOD=T3278Mx	11
[4] LU13	LU	LOCADDR=14,	DLOGMOD=T3278Mx	12
[4] LU14	LU	LOCADDR=15,	DLOGMOD=T3278Mx	13

Physically
Attached
Devices

3290 Secondary
Terminal
Addresses

3274

2

3290 (MIS)

and

3

3290 (MIS)

and

4

[1] Two-Screen
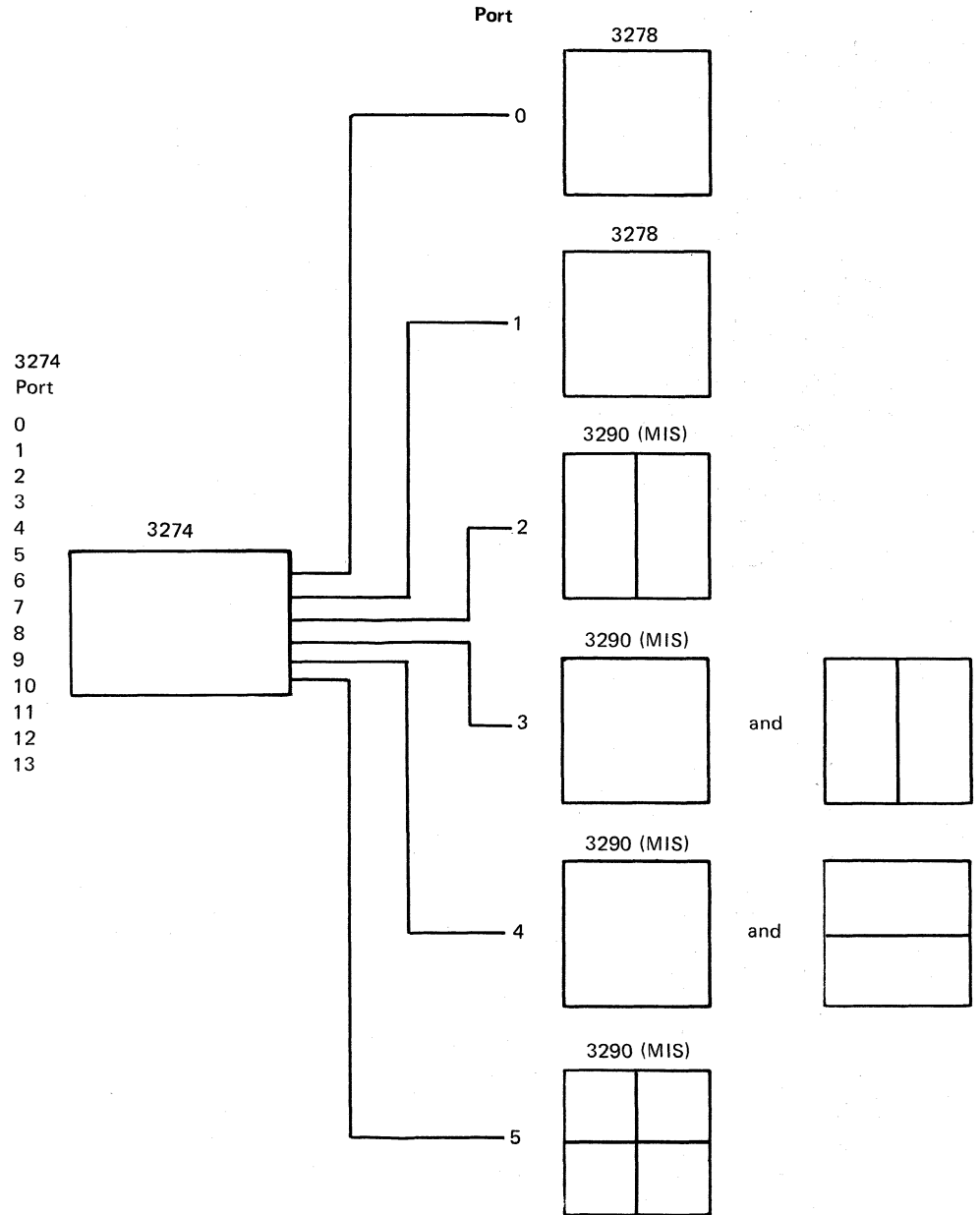[2] Three-Screen
[3] Three-Screen
[4] Four-Screen

3290 (MIS)

5

Figure J-5. Example of How the Host Views MIS Addressing in SNA Protocol

List of Abbreviations

A/FE. Americas/Far East.
Alt. Alternate.
APL. A programming language.
ASCII. American
National Standard Code for Information Interchange.

BPS. Bits per second.
BSC. Binary synchronous communication.

CCA. Common communication adapter.
CCITT. Consultative
Committee on International Telephone and Telegraph.
CDSTL. Connect data set to line.
CPU. Central processing unit.

dB. Decibel.
DCC. Disconnect command chaining.
DCE. Data-Circuit-Terminating Equipment.
DDS. Digital Data Service.
DSR. Data set ready.
DTE. Data terminal equipment.
DTR. Data terminal ready.

E/ME/A. Europe/Middle East/Africa.
EBCDIC. Extended binary-coded decimal interchange code.
EIA. Electronic Industries Association.

FCC. Federal Communications Commission.

HPCA. High-Performance Communications Adapter.

IML. Initial microcode load.
I/O. Input/output.

kb. Kilobyte.

LPDA. Link problem determination aid.
LU. Logical unit.

MDT. Modified data tag.

NCP. Network Control Program.
NRZ. Nonreturn to zero.
NRZI. Nonreturn to zero inverted.
NTT. Nippon Telegraph and Telephone.

OEM. Original equipment manufacturer.
OLTEP. Online test executive program.

PF. Program function.
PLU. Primary logical unit.
PS. Programmed Symbols.
PU. Physical unit.
PUID. Physical unit identification.

RPQ. Request for price quotation.
RTS. Request to send.

SCS. SNA character string.
SDLC. Synchronous data link control.
SFAP. Structured Field and Attribute Processing.
SNA. Systems network architecture.
SNBU. Switched network backup.
SSCP. System services control point.
SYSGEN. System generation.

UCW. Unit control word.
U.S. United States.

WT. World Trade.

IBM 3270 Information Display System
3274 Control Unit Planning, Setup, and
Customizing Guide

Order No. GA27-2827-11

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