

GA27-2837-9

File No. S360/S370/S3/4300/8100-09

Systems

**IBM 3270
Information Display System
Character Set Reference**

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Preface

This manual presents keyboard layouts, input/output (I/O) interface codes, and character generator contents, that are available with the 3270 Information Display System both in the United States and in World Trade (WT) countries. It provides management personnel, programmers, and systems analysts with general reference material relating to the 3270 Information Display System keyboards and to the I/O interface codes and character generators that support various languages.

Note: Keyboard information for many terminals attaching to the 3270 Information Display System is contained in the terminal publications.

Tenth Edition (April 1987)

This major revision obsoletes and replaces GA27-2837-8. Changes are made periodically to the information herein; before using this publication in connection with the installation and operation of IBM equipment, refer to the *IBM System/360 Bibliography*, GC20-0360, and *IBM System/370, 30xx, and 4300 Processors Bibliography*, GC20-0001, for the editions that are applicable and current.

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Summary of Changes

Tenth Edition (April 1987)

- New language keyboard layouts have been added for the 3276, 3278, and 3279 display stations:
 - Greek Typewriter and Data Entry keyboards
 - Icelandic Typewriter keyboard
 - Turkish Typewriter keyboard
- A new language keyboard layout has been added for the 3178 Display Station:
 - Icelandic Typewriter keyboard
- New language keyboard layouts have been added for the 3179 Color Display Station:
 - Cyrillic Typewriter keyboard
 - Greek Typewriter keyboard
 - New Belgian Typewriter and APL keyboards
 - Swiss French Typewriter and APL keyboards
 - Swiss German Typewriter and APL keyboards
 - Turkish Typewriter keyboard
- New language keyboard layouts have been added for the 3180 Display Station:
 - Austrian/German Data Entry keyboard
 - Cyrillic Typewriter and APL keyboards
 - Danish Data Entry keyboard
 - English (U.K.) Data Entry keyboard
 - Finnish/Swedish Data Entry keyboard
 - French (AZERTY) Data Entry keyboard
 - Greek Typewriter keyboard
 - Icelandic Typewriter keyboard
 - Italian Data Entry keyboard
 - New Belgian Typewriter and APL keyboards
 - Norwegian Data Entry keyboard
 - Portuguese Data Entry keyboard
 - Swiss French Typewriter keyboard
 - Swiss German Typewriter and APL keyboards
 - Turkish Typewriter keyboard
- The following I/O interface codes have been added:
 - Cyrillic
 - Greek
 - Icelandic
 - New Belgian
 - ROECE Latin
 - Turkish
 - Yugoslav
- Language character-generator codes for designated 3270 terminals have been added in a new chapter (Chapter 12). The codes, and their associated terminals, are listed below:
 - Cyrillic (3179 and 3180)
 - Greek (3178, 3278, and 3279)
 - Greek (3179, 3180, 3191, and 3192)
 - Icelandic (3178, 3278, and 3279)
 - Icelandic (3179, 3180, and 3191)
 - Icelandic (3192)
 - New Spanish

- ROECE Latin (3191 and 3192)
- Standard
- Turkish (3278 and 3279)
- Turkish (3179 and 3180)
- Turkish (3191 and 3192)
- Yugoslav (3191 and 3192)

Other technical changes have been made throughout the manual.

Ninth Edition (August 1986)

- A new language keyboard layout (New Spanish) has been added to 3179, 3180, 3276, 3278, and 3279 Display Stations.
- APL keyboard layouts (all languages) have been added to 3180 Display Stations.
- Four new keyboard layouts (U.S.) have been added that are unique to the 3174 Control Unit Subsystem.
- The following I/O interface codes have been added:
 - English (U.S.) ASCII-7
 - English (U.S.) ASCII-8
 - English (U.S.) ASCII/International
 - New Spanish
- 3275 Display Station keyboard layouts have been removed.
- 3275 3284, and 3288 I/O interface codes have been removed.

Other technical changes have been made throughout the manual.

Eighth Edition (September 1984)

- Austrian/German, English (U.K.), French (AZERTY), Italian, and Spanish keyboards have been added for the IBM 3270 Personal Computer.
- An APL keyboard has been added for the IBM 3270 Personal Computer/G and /GX graphics work stations.
- Data Entry and Program Function keypads have been added for the 3179 Color Display Station and the 3180 Display Station.

Technical changes are made throughout the publication.

Chapter 1. Introduction

This manual shows the various keyboard layouts, arranged alphabetically by language, for the following 3270 Information Display System-attachable units:

- 3178 Display Station Models C1, C2, C3, and C4
- 3179 Color Display Station
- 3180 Display Station Model 1
- 3270 Personal Computer
- 3270 Personal Computer/G and /GX
- 3276 Control Unit Display Station Models 1, 2, 3, 4, 11, 12, 13, and 14
- 3277 Display Station Models 1 and 2
- 3278 Display Station Models 1, 2, 3, 4, and 5
- 3279 Color Display Station Models S2A, S2B, S3G, 2X, and 3X
- 3290 Information Panel

In addition, this manual gives the I/O interface code charts for the following alphanumeric language requirements:

Austrian/German	Icelandic
Belgian	International
Brazilian	Italian
Brazilian/Portuguese	Japanese English
Canadian Bilingual	Japanese Katakana
Canadian French	New Belgian
Cyrillic	New Spanish
Danish/Norwegian	Portuguese
English (U.K.)	ROECE Latin
English (U.S.)	Spanish
English (U.S.) ASCII-7	Spanish-Speaking
English (U.S.) ASCII-8	Swiss-French
English (U.S.) ASCII/International	Swiss-German
Finnish/Swedish	■ Thai
French	Turkish
Greek	Yugoslav
Hebrew	

Also included are the I/O interface code charts for the following features:

- APL Character Set
- TEXT Character Set
- Magnetic media readers

The I/O interface code charts, except where noted, are applicable to the following machines in addition to those listed previously:

- 3230 Printer Model 2
- 3262 Line Printer Models 3 and 13
- 3268 Printer Models 2 and 2C
- 3271 Control Unit Models 1, 2, 11, and 12
- 3272 Control Unit Models 1 and 2
- 3274 Control Unit Models 1A, 1B, 1C, 1D, 21A, 21B, 21C, 21D, 31A, 31C, 31D, 41A, 41C, 41D, 51C, and 61C
- 3286 Printer Models 1 and 2
- 3287 Printer Models 1, 1C, 2, and 2C
- 3289 Line Printer Models 1 and 2
- 4250 Printer
- 5210 Printer Models G01 and G02

Chapter 2. 3277 Display Station Keyboards

This chapter provides definitions and layouts for the 3277 Display Station keyboards.

Keyboard Definitions

Six keyboard types are defined in this chapter. They are shown in Figures 2-1 and 2-2 with English (U.S.) as the keyboard language. All the keyboards have special symbol keys and control keys for entering data. The type of keyboard determines the characters and symbols that can be key-entered from the display station, but does not determine which type of characters and symbols can be transmitted from the system for the display image. Variations among keyboards include 66-key and 78-key versions. The 66-key keyboard provides all the basic operator keys. The 78-key keyboard provides expanded operator-to-program message flexibility with 12 additional keys (program function keys) that may be defined to fit the requirements of the application program.

The keyboards are:

Typewriter Keyboard: This keyboard provides the basic typewriter key layout. Alpha-numeric keys are encoded with both lowercase and uppercase codes. The Typewriter keyboard is available both with program function keys PF1 through PF12 (78-key version) and without them (66-key version).

Data Entry Keyboard: This keyboard provides the basic data-entry key layout. When characters are entered in a numeric field, the keyboard is automatically upshifted to take advantage of the grouped numeric keys (bold-outlined in Figure 2-1). The Data Entry keyboard contains 66 keys, including program function keys PF1 through PF5.

Data Entry Keypunch Keyboard: This keyboard has the same keys and features as the Data Entry keyboard. The key layout of this keyboard more closely resembles the layout of the 029 Card Punch and 129 Card Data Recorder. In many cases the layout is identical with that of the keypunch units except for the function key designations. This keyboard is recommended for data entry applications.

Operator Console Keyboard: This keyboard provides an IBM 1052 Model 7 key layout. It has 78 keys, including program function keys PF1 through PF12.

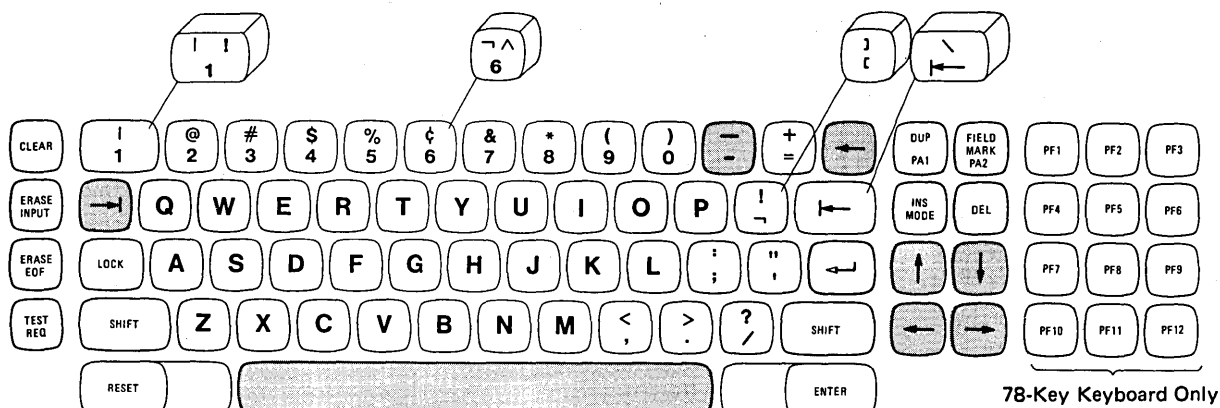
APL Keyboard Feature (3277 Model 2 Only): The 66-key (without program function keys) and 78-key versions of the APL keyboard permit the entry of 169 characters oriented to APL programming applications. In addition to the dual-case U.S. extended binary-coded decimal interchange code (EBCDIC) character set, this keyboard has the APL character set to permit the direct entry and display of underscored uppercase alphabetic and compound APL characters.

Text Keyboard Feature (3277 Model 2 Only): This 78-key keyboard is used in conjunction with the 3277 Model 2 Display Station to enable customers to enter and display a mono- or dual-case character set or a TN (Text) character set in text-processing operations. The keyboard is also capable of performing double-speed typematic operations.

Keyboard Layouts

The 3277 keyboards for the United States and for World Trade countries are illustrated in Figures 2-1 through 2-13. Note that Figures 2-1 and 2-2, which show the keyboard types, also represent the English (U.S.) keyboard-language version of these keyboards.

Typematic Keys
 Numeric Keys



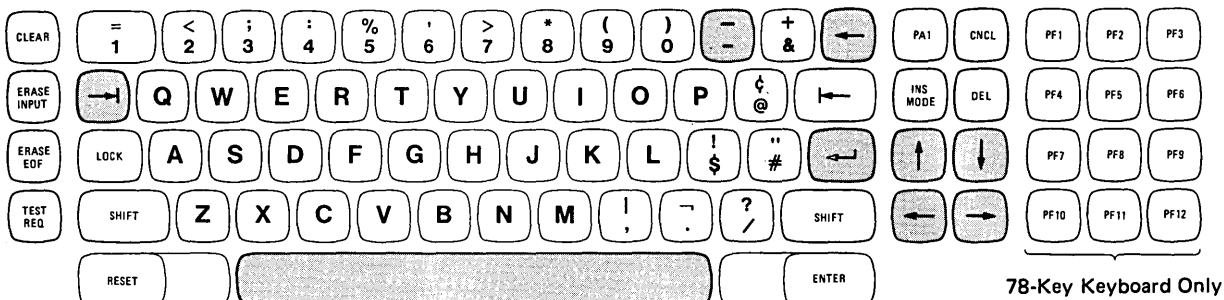
Typewriter Keyboard (EBCDIC) – The American National Standard Code for Information Interchange (ASCII) typewriter keyboard, which accommodates both ASCII-A and ASCII-B character-set options, has four different keys, shown above keyboard.



Data Entry Keyboard

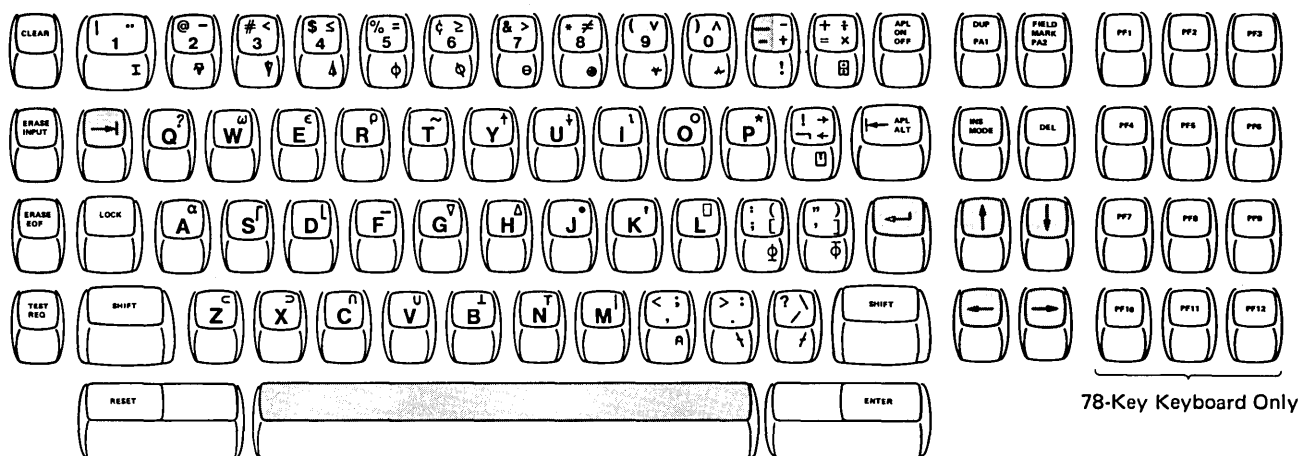


Data Entry Keypunch Keyboard





Operator Console Keyboard

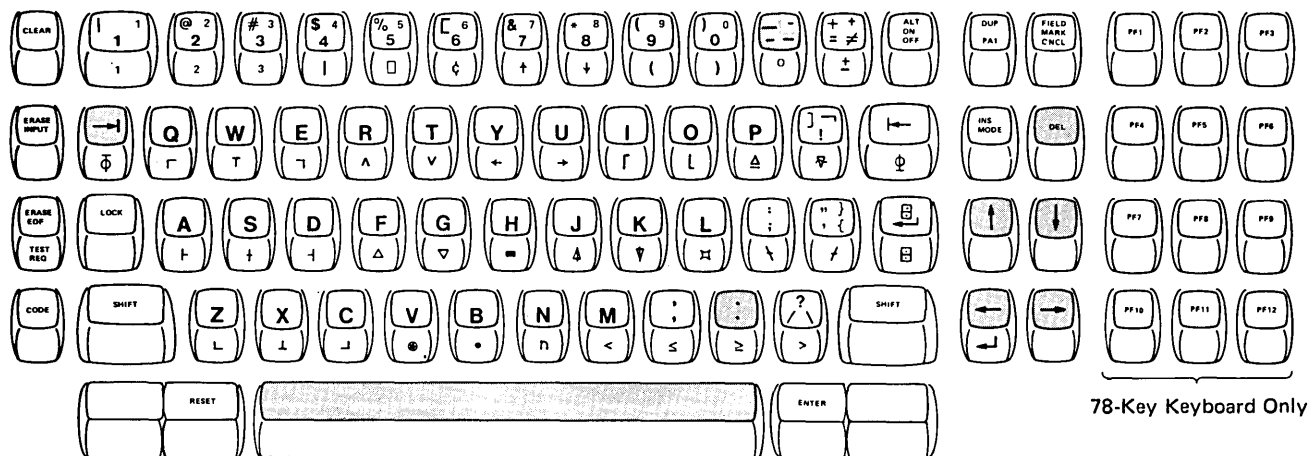
Figure 2-1. Basic Keyboards for 3277 Display Stations (English [U.S.])



Legend:

-  Typematic Keys
-  Typematic Key (APL Off)

APL Keyboard



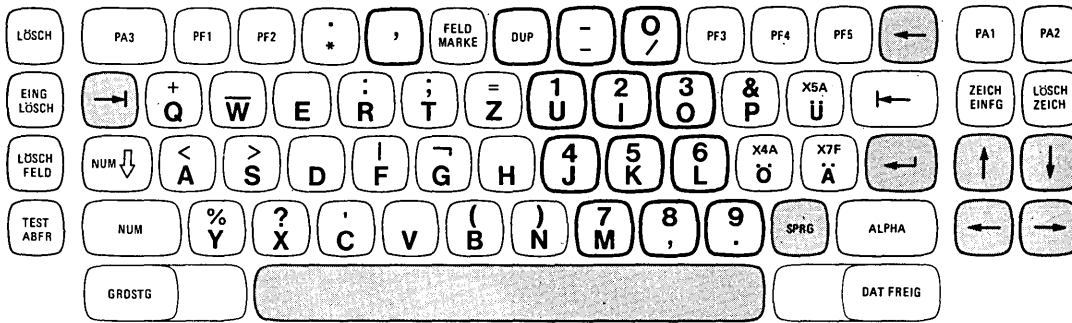
Legend:

-  Typematic Keys


Text Keyboard

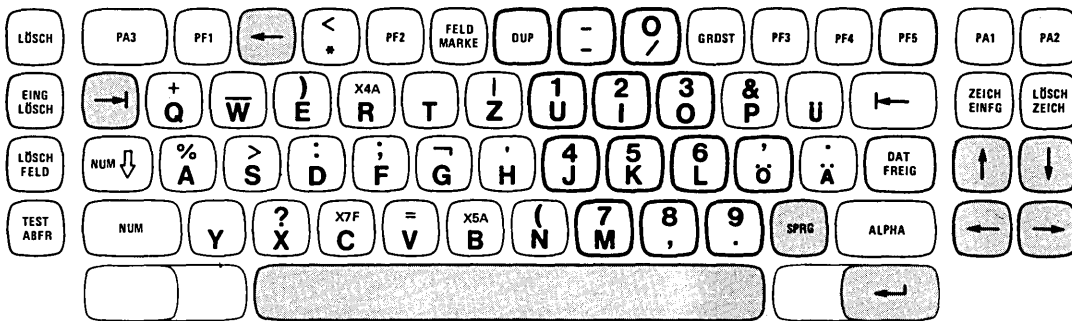
Figure 2-2. Special Feature Keyboards for 3277 Model 2 Display Station (Available Only with English [U.S.])

 Typematic Keys
  Numeric Keys

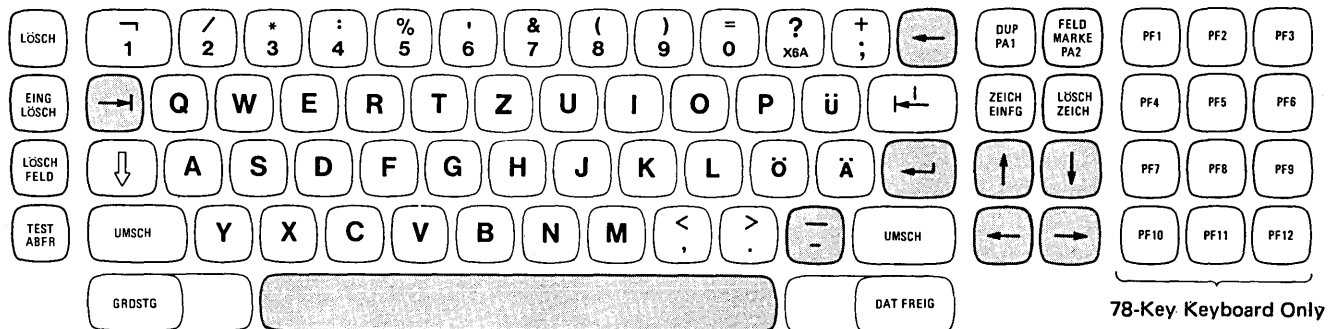


Data Entry

 Typematic Keys
  Numeric Keys

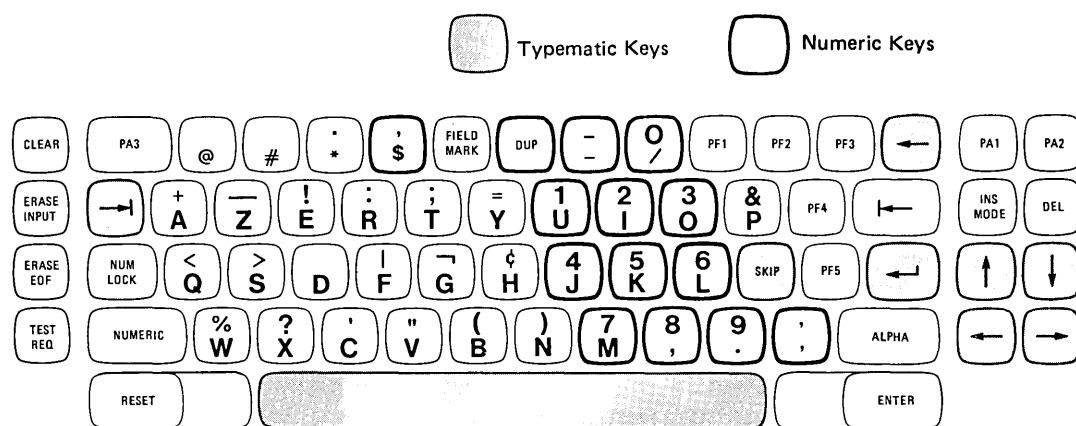


Data Entry Keypunch Layout

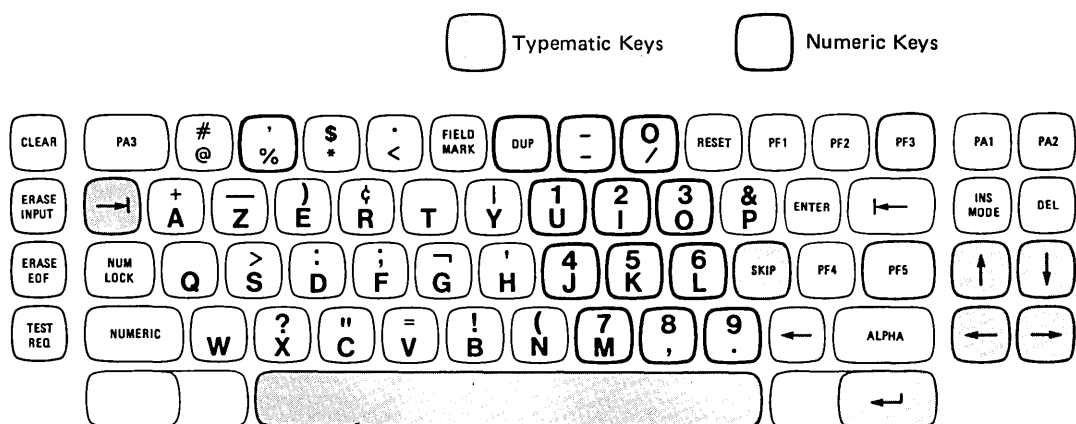


Typewriter

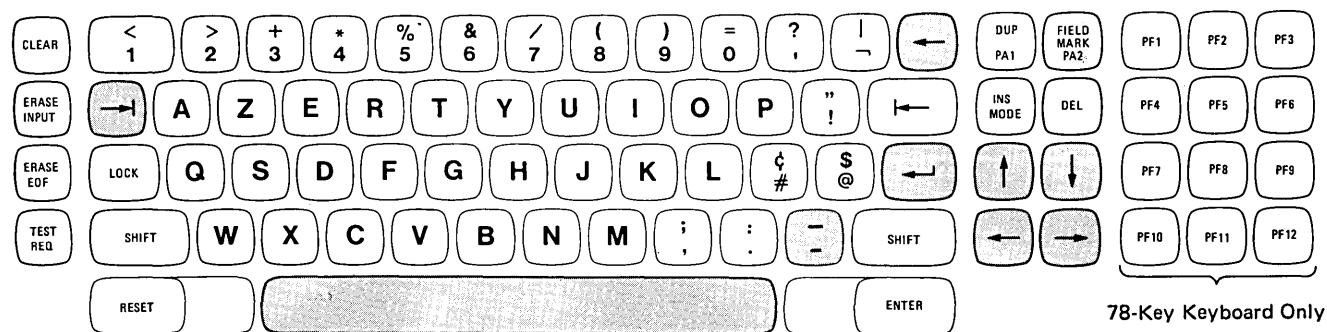
Figure 2-3. Austrian/German Keyboards for 3277 Display Stations



Data Entry

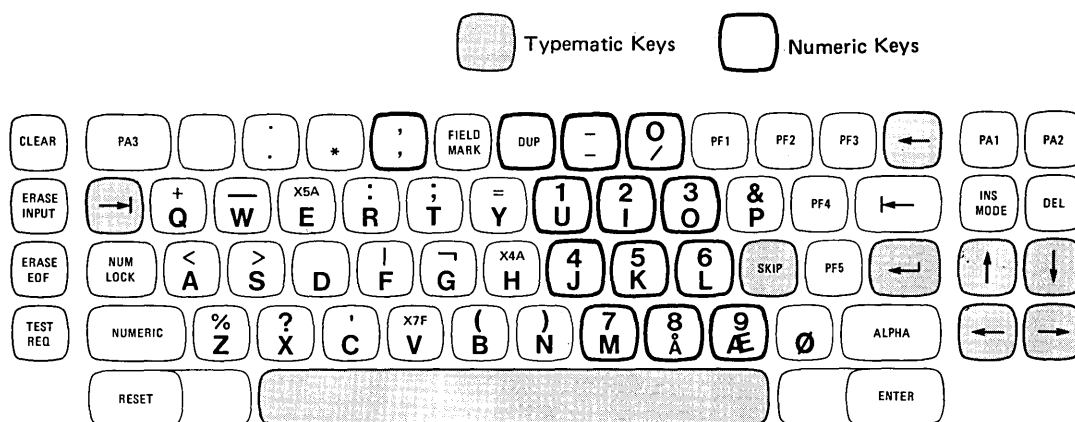


Data Entry Keypunch Layout

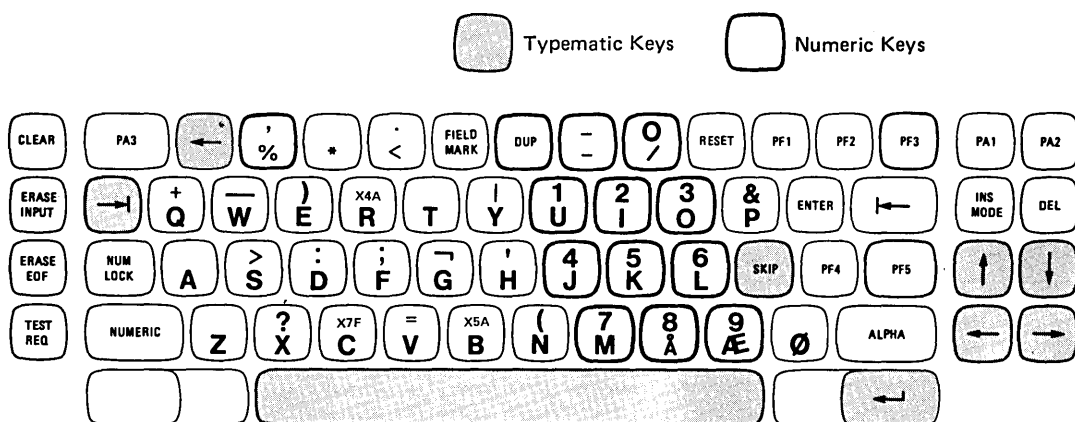


Typewriter

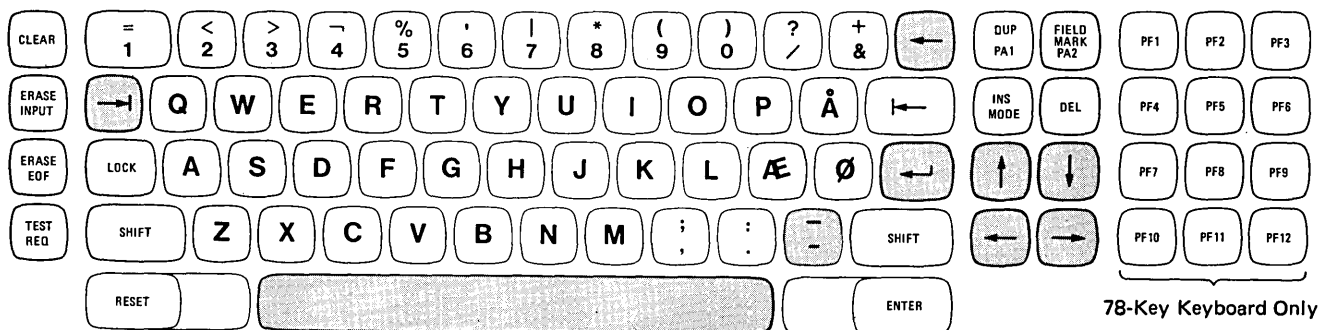
Figure 2-4. Belgian Keyboards for 3277 Display Stations



Data Entry

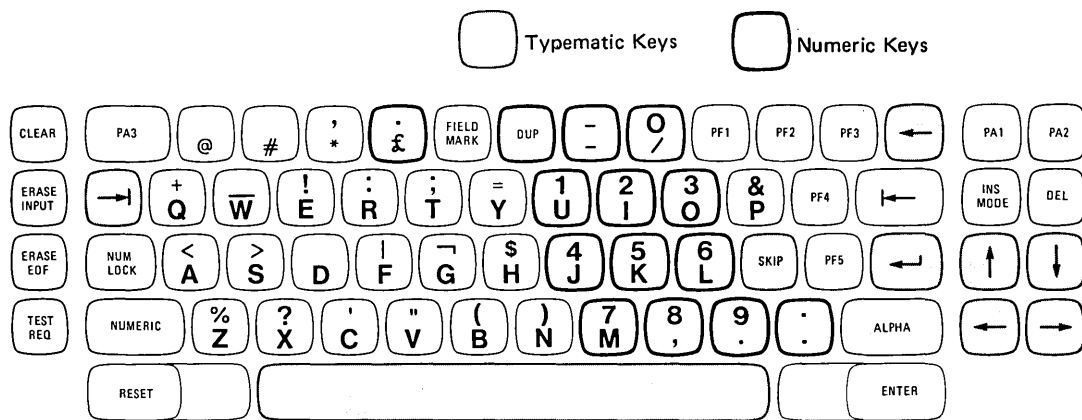


Data Entry Keypunch Layout

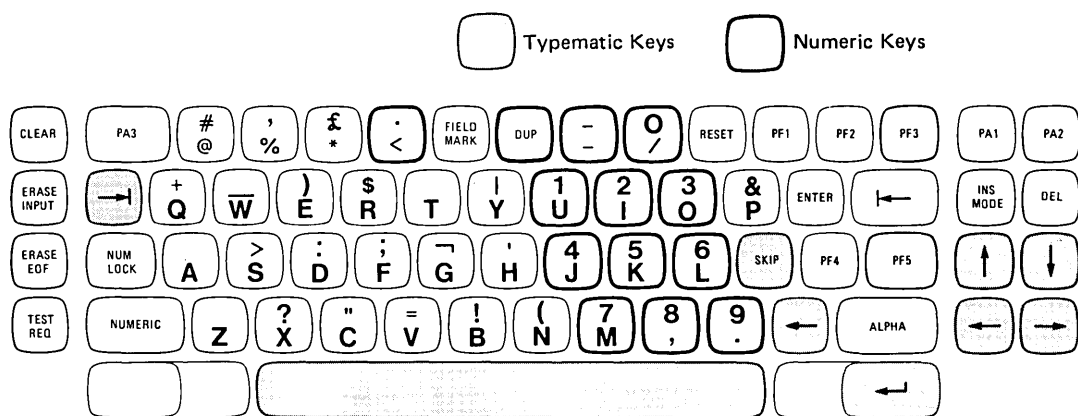


Typewriter

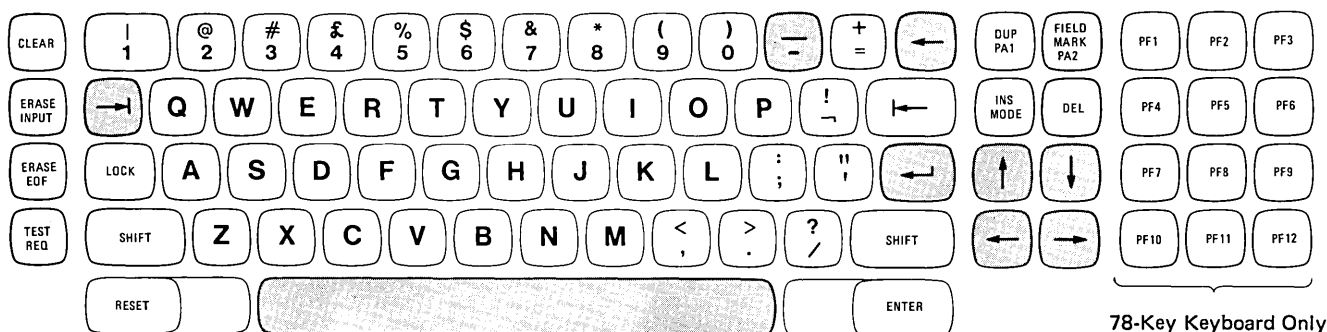
Figure 2-5. Danish Keyboards for 3277 Display Stations



Data Entry



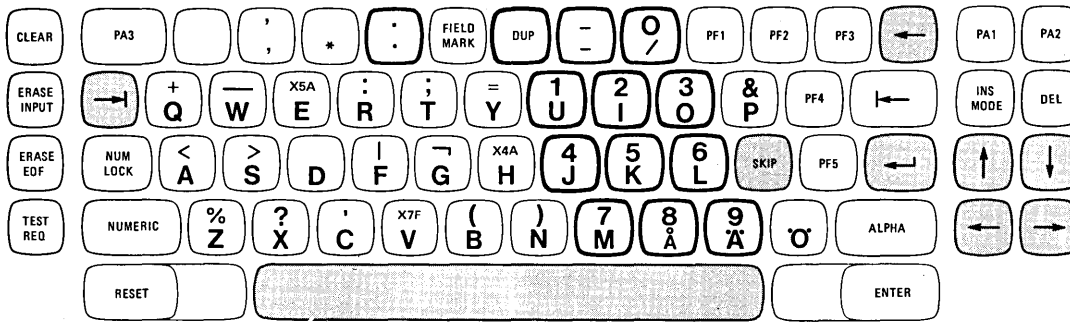
Data Entry Keypunch Layout



Typewriter

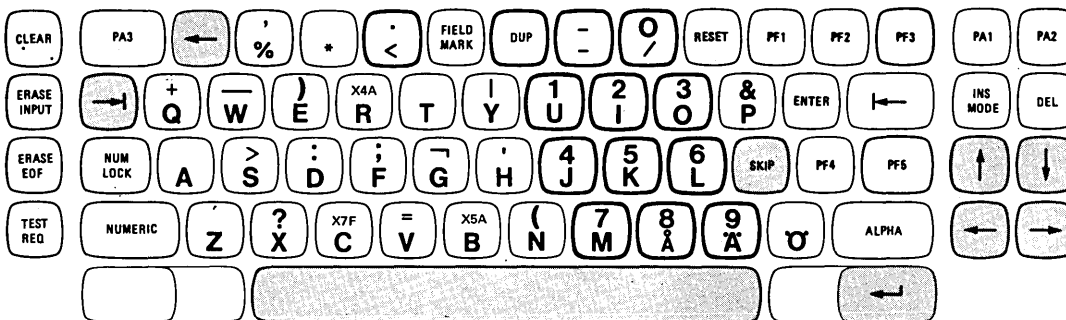
Figure 2-6. English (U.K.) Keyboards for 3277 Display Stations

☐ Typematic Keys ☐ Numeric Keys

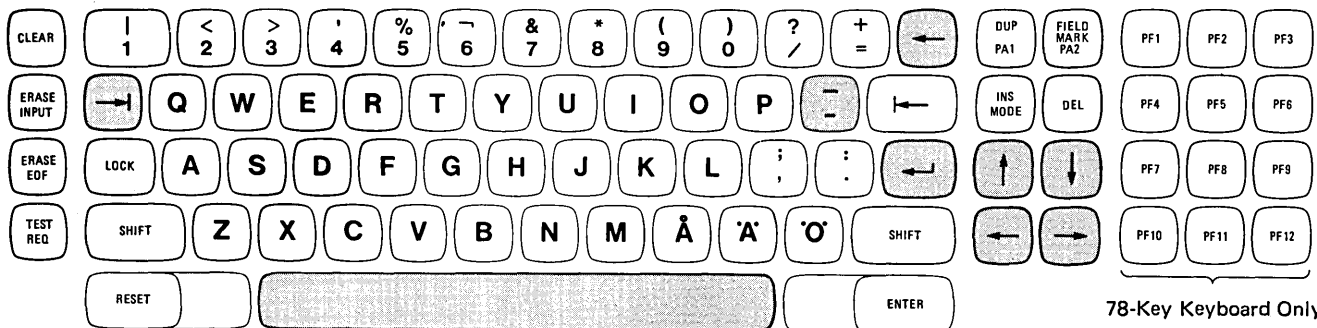


Data Entry

☐ Typematic Keys ☐ Numeric Keys



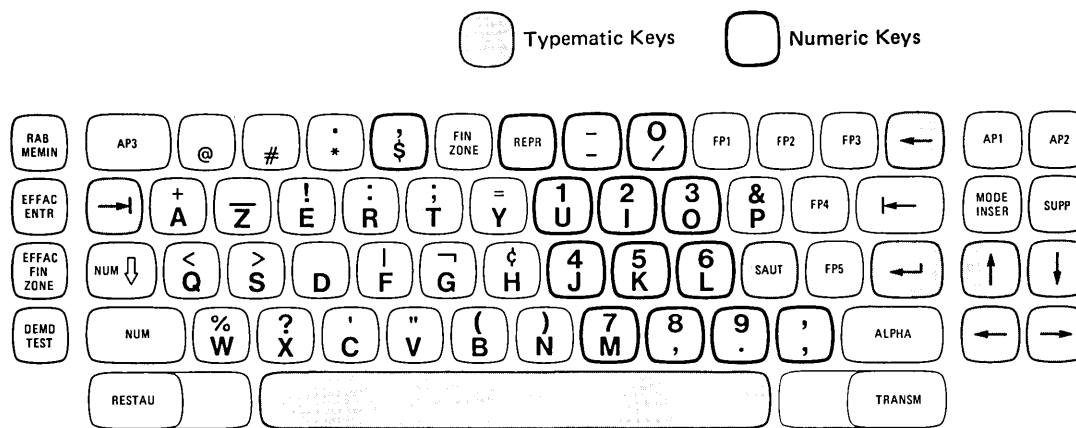
Data Entry Keypunch Layout



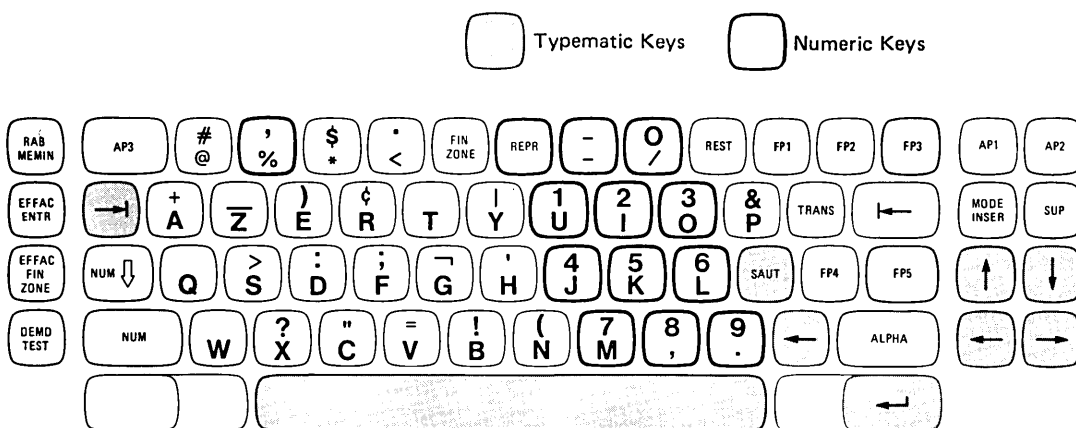
78-Key Keyboard Only

Typewriter

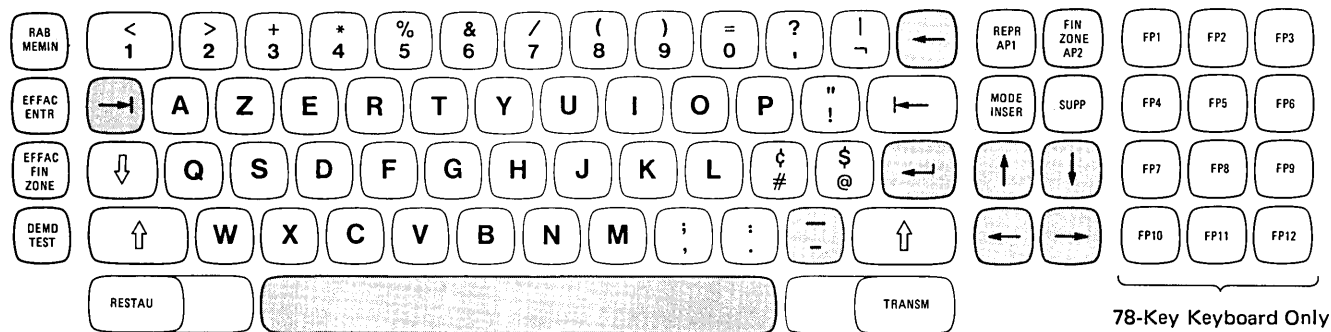
Figure 2-7. Finnish/Swedish Keyboards for 3277 Display Stations



Data Entry



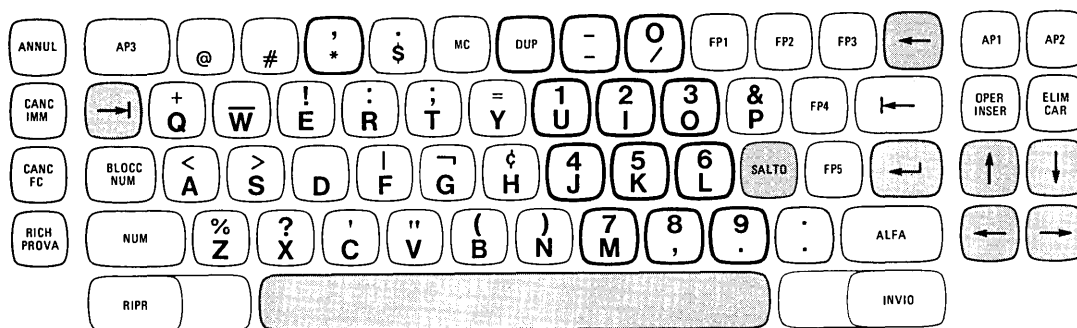
Data Entry Keypunch Layout



Typewriter

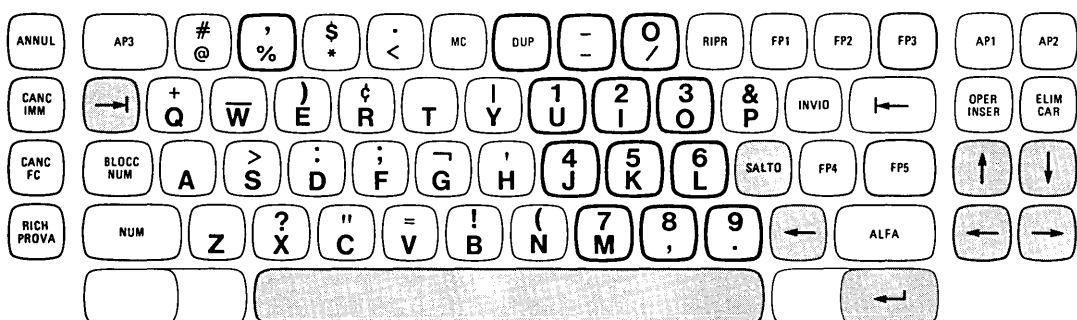
Figure 2-8. French Keyboards for 3277 Display Stations

☒ Typematic Keys ☐ Numeric Keys

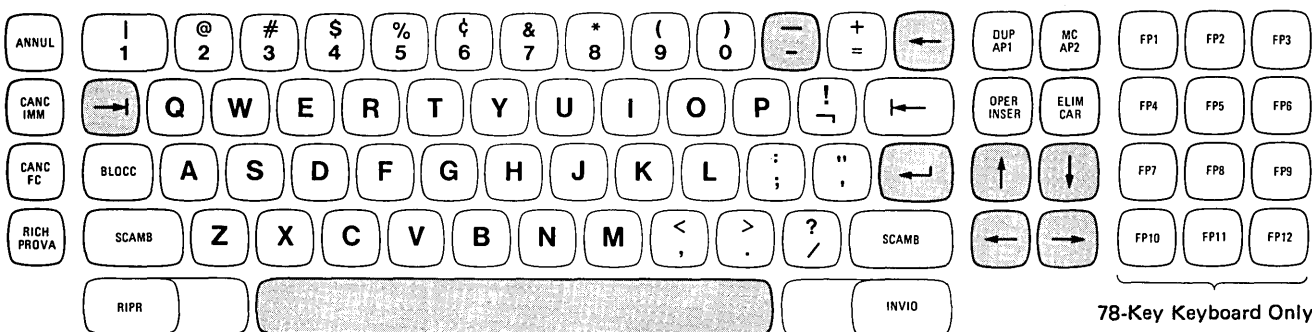


Data Entry

☒ Typematic Keys ☐ Numeric Keys



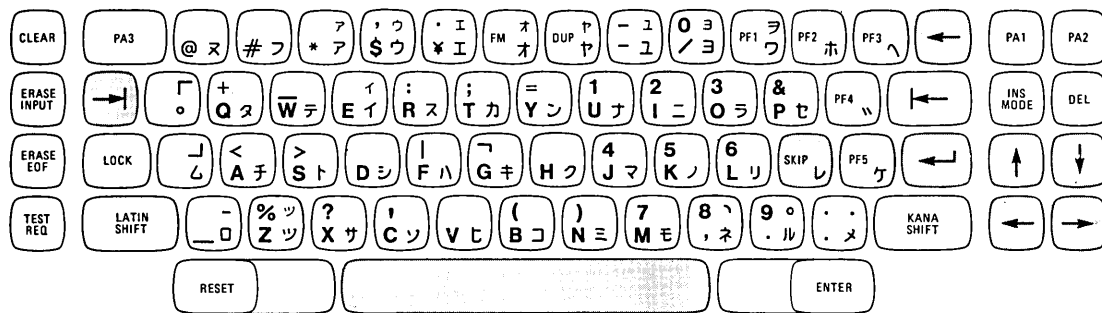
Data Entry Keypunch Layout



78-Key Keyboard Only

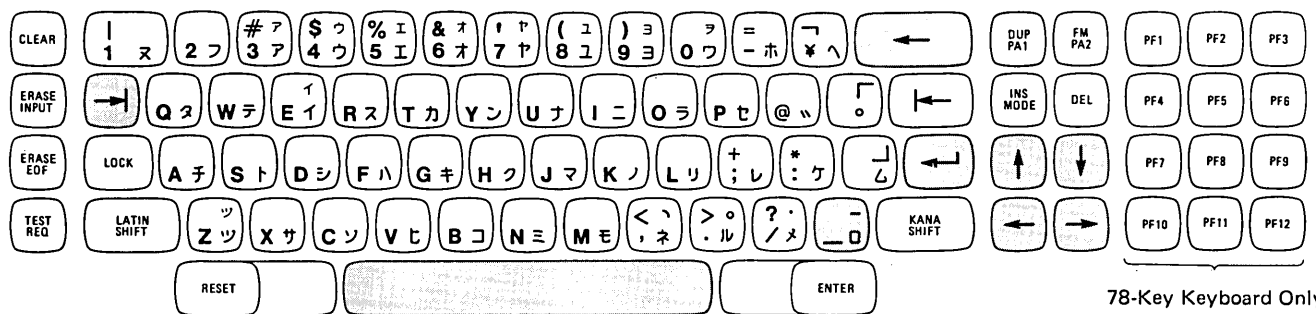
Typewriter

Figure 2-9. Italian Keyboards for 3277 Display Stations



☐ Typematic Keys

Data Entry



78-Key Keyboard Only

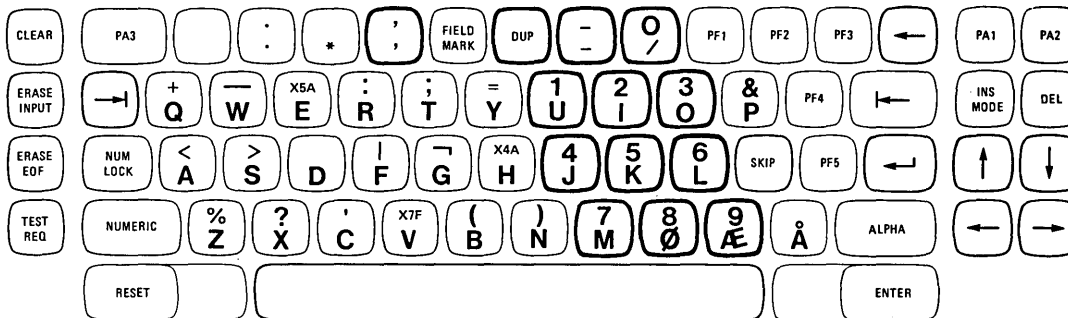
☐ Typematic Keys

Typewriter

Note: Only the underscore (—) character on the ☐ key is typematic.

Figure 2-10. Japanese Katakana Keyboards for 3277 Display Stations

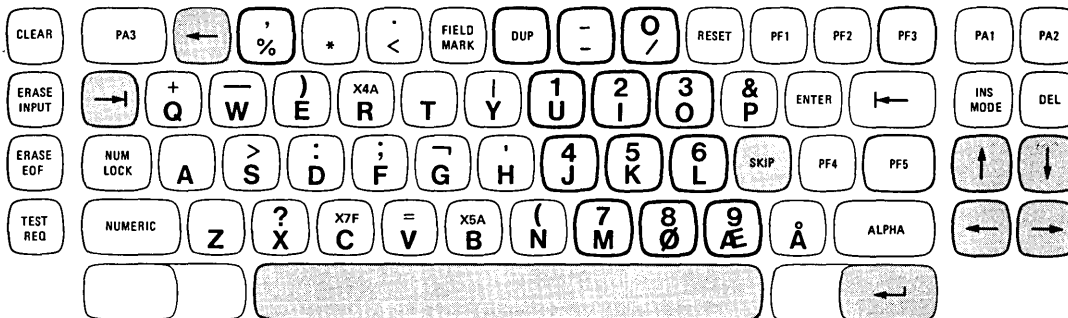
Numeric Keys



Data Entry



Numeric Keys



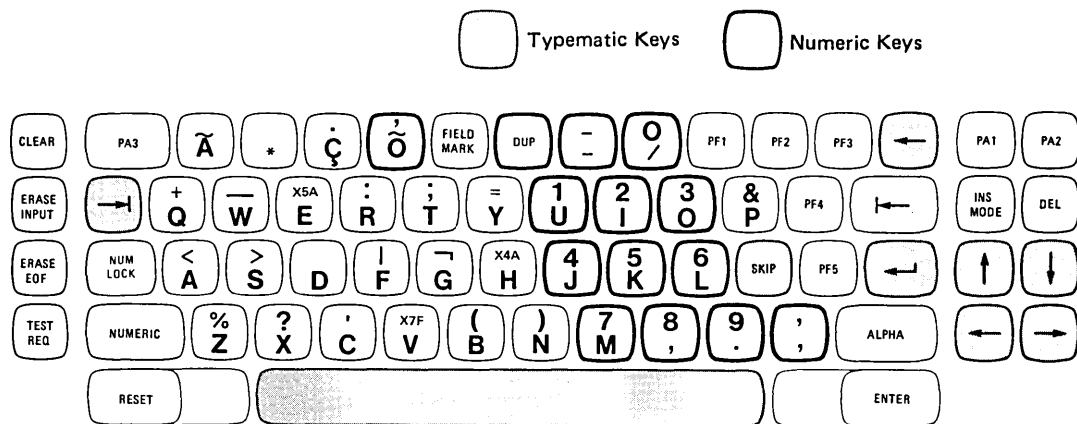
Data Entry Keypunch Layout



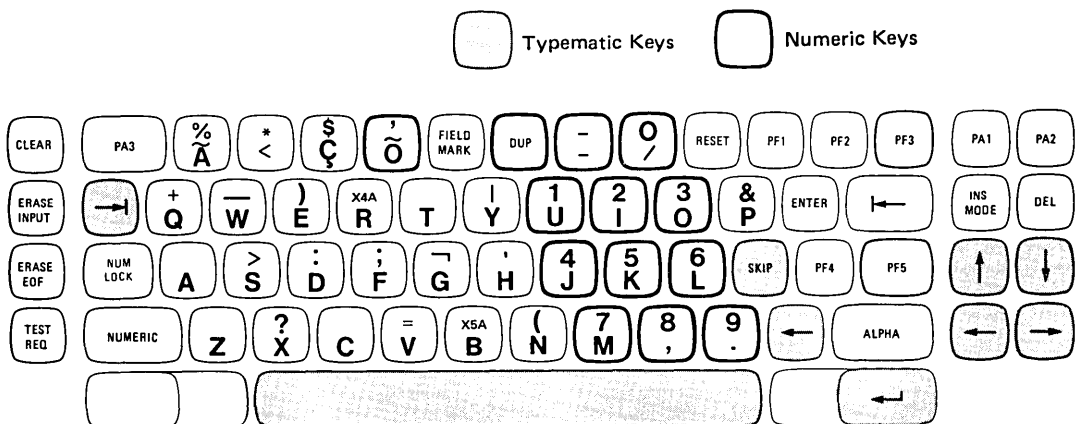
78-Key Keyboard Only

Typewriter

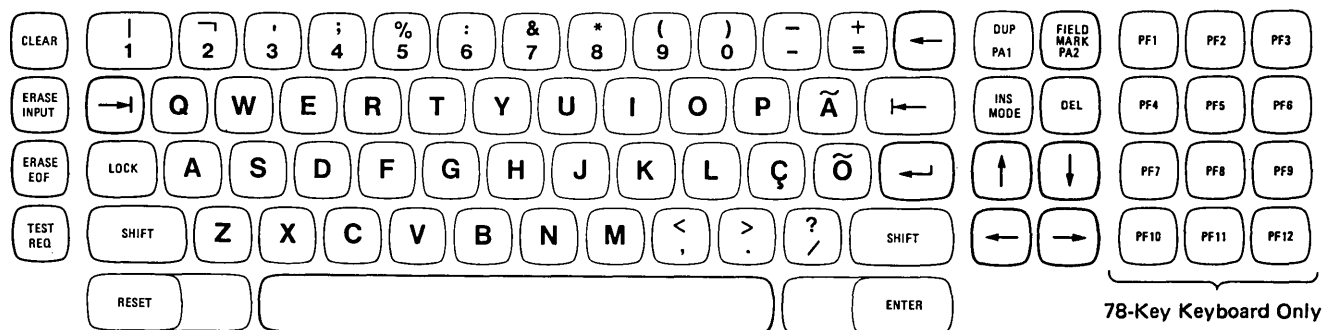
Figure 2-11. Norwegian Keyboards for 3277 Display Stations



Data Entry

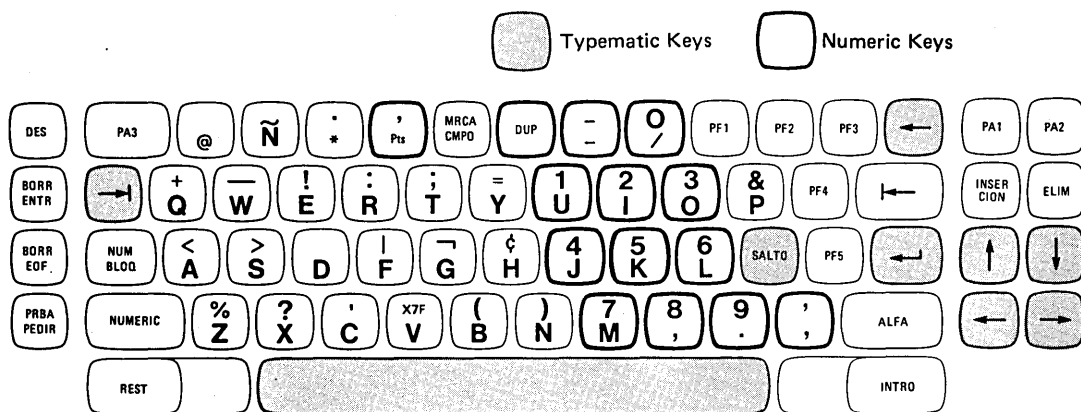


Data Entry Keypunch Layout

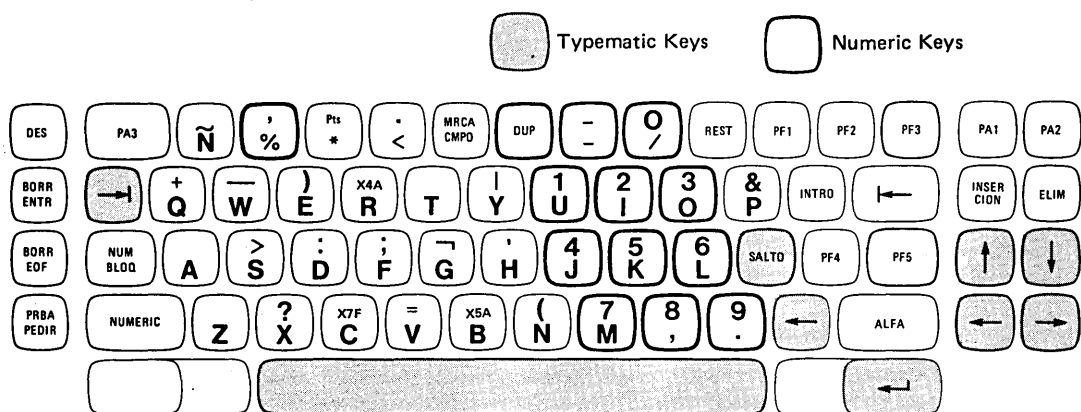


Typewriter

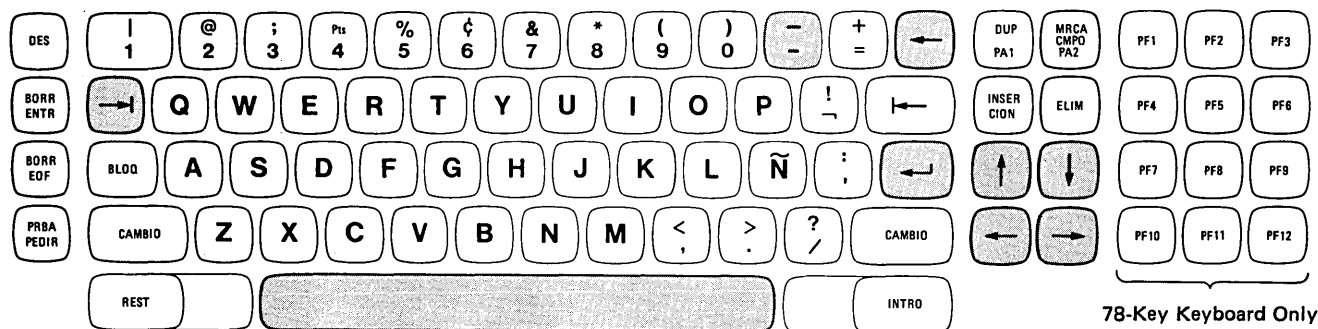
Figure 2-12. Portuguese Keyboards for 3277 Display Stations



Data Entry



Data Entry Keypunch Layout



Typewriter

Figure 2-13. Spanish Keyboards for 3277 Display Stations

Chapter 3. 3276 Control Unit Display Station, 3278 Display Station, and 3279 Color Display Station Keyboards

This chapter provides definitions and layouts for the 3276 Control Unit Display Station, 3278 Display Station, and 3279 Color Display Station keyboards.

Keyboard Definitions

75-key and 87-key keyboards are used with the 3276, 3278, and 3279 display stations. One key is added for the Katakana versions.

Displays with Typewriter, Data Entry, or Data Entry Keypunch keyboards may be mixed in the same control unit environment, provided that the keyboard languages are the same. One keyboard language cannot be interchanged with another keyboard language.

Twelve of the keys in the top row of the 75-key or 76-key keyboard are standard program function keys PF1 through PF12. (APL keyboards do not have PF keys in the top row: see Note below.) On 87-key and 88-key keyboards, an additional group of 12 program function keys is provided on the right-hand side of the keyboard. When an 87-key or 88-key keyboard is attached to a 3278 Model 2, 3, or 4, or to a 3279 Model 2B or 3B, the additional program function keys may have extended functions. The added functions control the extended attributes: highlighting, programmed symbols, and, on the 3279, color.

Note: On 87-key and 88-key APL and Text keyboards, the 12 program function keys to the right of the keyboard are numbered PF1 through PF12. Where these keys also control attribute selection, their function is the same as on other 87-key and 88-key keyboards.

The keyboards are:

75-Key Typewriter Keyboard: This keyboard has 49 data keys and 26 control keys. Twelve program function keys are included in the keyboard. The Japanese English and Japanese Katakana Typewriter keyboards each contain one additional control key. The Swiss-French and Swiss-German typewriter keyboards have dead keys that provide a circumflex (ˆ) with lowercase a, e, i, o, and u, and a grave accent (˘) with lowercase a, e, i, o, and u. Another dead key provides a diaeresis (¨) with lowercase a, e, i, o, and u, and uppercase A, O, and U. The diaeresis, circumflex, and grave accent may also be combined with a space. Pressing a dead key causes the accent mark shown on the key to appear in the position marked by the cursor, but the cursor does not move. The letter that is to receive the accent is keyed next. Refer to the Typewriter keyboard figure for each national language.

75-Key Data Entry Keyboard: This keyboard has 35 data keys, 10 program function keys, and 30 control keys. This keyboard layout is available in a 75-key keyboard only (76-key for Japanese Katakana). Refer to the Data Entry keyboard figure for each national language.

75-Key Data Entry Keypunch Keyboard: This keyboard has 35 data keys, 10 program function keys, and 30 control keys. This keyboard layout has a *reset* key function and an *enter* key function to facilitate “one-hand” typing. Refer to the Data Entry Keypunch keyboard figure for each national language.

87-Key Typewriter Keyboard: This keyboard has 49 data keys, 26 control keys, and 12 additional program function keys. The Japanese English and Japanese Katakana keyboards each contain one additional control key, resulting in an 88-key keyboard.

Note: The extra 12 program function keys (PF13 through PF24) have been omitted from the national language keyboard figures (Figures 3-1 through 3-31) in this chapter because of art-space limitations. Figures 3-32 through 3-37, however, each show an 87-key keyboard.

87-Key EBCDIC Typewriter/APL Keyboard: This keyboard has modified keytops to allow entry of 81 APL specific characters in addition to the dual-case 94-character EBCDIC set. An APL ON/OFF key is used to place the keyboard in EBCDIC typewriter or APL mode. In contrast to the 87-key Typewriter keyboard *without APL*, the program function keys (PF1 through PF12) have been relocated from the top-row keyfaces of the main keyboard to the right side of the main keyboard area.

105-Character French (AZERTY) Typewriter/APL Keyboard: This keyboard looks the same as the French AZERTY, but use of the dead key provides 105 characters. A dead-key operation provides a diaeresis with lowercase e, i, u, and y, and a circumflex with lowercase a, e, i, o, and u. The diaeresis and the circumflex may also be combined with a space. Pressing a dead key causes the accent mark shown on the key to appear in the position designated by the cursor, but the cursor does not move. The letter that is to receive the accent is keyed next. There is no dead-key operation on the French AZERTY Data Entry and Data Entry Keypunch keyboards.

87-Key EBCDIC Typewriter/Text Keyboard: This keyboard has modified keytops to allow entry of 65 Text specific characters in addition to the dual-case 94-character EBCDIC set. A Text ON/OFF key is used to place the keyboard in either EBCDIC typewriter or Text mode. In contrast to the 87-key typewriter keyboard *without Text*, the program function keys (PF1 through PF12) have been relocated from the top-row keyfaces of the main keyboard to the right side of the main keyboard area.

87-Key EBCDIC Typewriter Overlay Keyboard: This typewriter layout keyboard is similar to the 87-key EBCDIC Typewriter keyboard. The 48 character keys in the typewriter section of the keyboard have smaller keytops. Blank overlays are available for the user to mark up special characters or symbols assigned to these keys when using programmed symbols (PS). The keytops of the 12 program function keys at the right of the keyboard are modified to show the attribute select functions. (See Figure 3-33.)

87-Key EBCDIC Attribute Select Typewriter Keyboard: This typewriter layout keyboard is similar to the 87-key EBCDIC Typewriter keyboard. The keytops of the 12 program function keys at the right of the keyboard are modified to show the attribute select functions. (See Figure 3-32.)

87-Key EBCDIC Attribute Select Typewriter/APL Keyboard: This typewriter layout keyboard is similar to the 87-key EBCDIC Typewriter/APL keyboard. The keytops of the 12 program function keys at the right of the keyboard are modified to show the attribute select functions. (See Figure 3-32.)

88-Key Japanese English and Japanese Katakana Typewriter/APL Keyboards: These keyboards have modified keytops to allow entry of 81 APL specific characters in addition to their respective national language character sets. An APL ON/OFF control key is used to place the keyboards from the national language modes in APL mode. In contrast to the 88-key national language typewriter keyboards (English/Katakana), the program function keys (PF1 through PF12) have been relocated from the top-row keyfaces of the main keyboard to the right side of the main keyboard area.

88-Key Japanese English and Japanese Katakana Typewriter Overlay Keyboards: These typewriter layout keyboards are similar to the 88-key Japanese English and Japanese Katakana Typewriter keyboards. The 48 character keys in the typewriter section of the keyboard have smaller keytops. Blank overlays are available for the user to mark up special characters or symbols assigned to these keys when using programmed symbols (PS). The keytops of the 12 program function keys at the right of the keyboard are modified to show the attribute select functions. (See Figure 3-33.)

88-Key Attribute Select Japanese English and Japanese Katakana Typewriter Keyboards: These typewriter layout keyboards are similar to the 88-key Japanese English and Japanese Katakana Typewriter keyboards. The keytops of the 12 program function keys at the right of the keyboard are modified to show the attribute select functions. (See Figure 3-32.)

88-Key Attribute Select Japanese English and Japanese Katakana Typewriter/APL Keyboards: These typewriter layout keyboards are similar to the 88-key Japanese English and Japanese Katakana Typewriter/APL keyboards. The keytops of the 12 program function keys at the right of the keyboard have been modified to show the attribute select functions. (See Figure 3-32.)

Model 038 87-Key Typewriter Keyboard: This keyboard has 48 data keys, 27 control keys, and a 12-key numeric keypad that also houses 24 program function keys. An SYS \$ key, useful for JES2 programmers, is added to the control keys on the left. The user can activate the CLEAR key without pressing the ALT key first.

In uppercase mode, the numeric keys on the keypad print 0 and 9, plus decimal and tab, in adding-machine format. In lowercase mode, the numeric keys function as program function keys PF1–PF12. When the ALT key is pressed first and then the numeric key, program function keys PF13–PF24 can be activated. *This keyboard is used only with terminals operating in a 3174 Subsystem Control Unit environment.* (See Figure 3-34.)

Model 158 87-Key Typewriter/APL Keyboard: This keyboard has 48 data keys, 27 control keys, and a 12-key numeric keypad that also houses 24 program function keys. The keyboard has modified keytops to allow entry of 81 APL specific characters in addition to the dual-case character set. An APL ON/OFF key is used to place the keyboard in typewriter or APL mode. An SYS \$ key, useful for JES2 programmers, is added to the control keys on the left. The user can activate the CLEAR key without pressing the ALT key first.

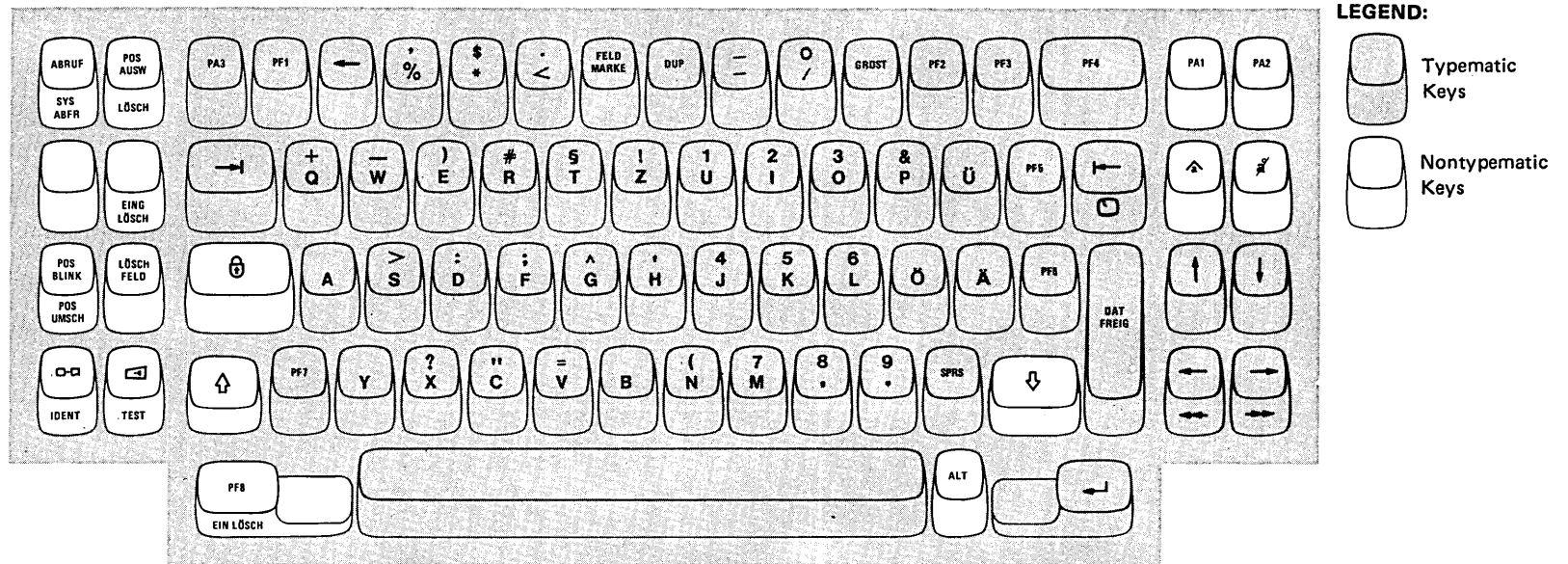
In uppercase mode, the numeric keys on the keypad print 0 and 9, plus decimal and tab, in adding-machine format. In lowercase mode, the numeric keys function as program function keys PF1–PF12. When the ALT key is pressed first and then the numeric key, program function keys PF13–PF24 can be activated. *This keyboard is used only with terminals operating in a 3174 Subsystem Control Unit environment.* (See Figure 3-35.)

Model 808 87-Key Typewriter Keyboard: This keyboard has 48 data keys, 27 control keys, and 12 program function keys located on the right side of the keyboard. The function of each program function key is determined by the application program used. The user can also activate the CLEAR key without pressing the ALT key first. The PA1 and PA2 keys are activated when the keyboard is in lowercase mode. *This keyboard is used only with terminals operating in a 3174 Subsystem Control Unit environment.* (See Figure 3-36.)

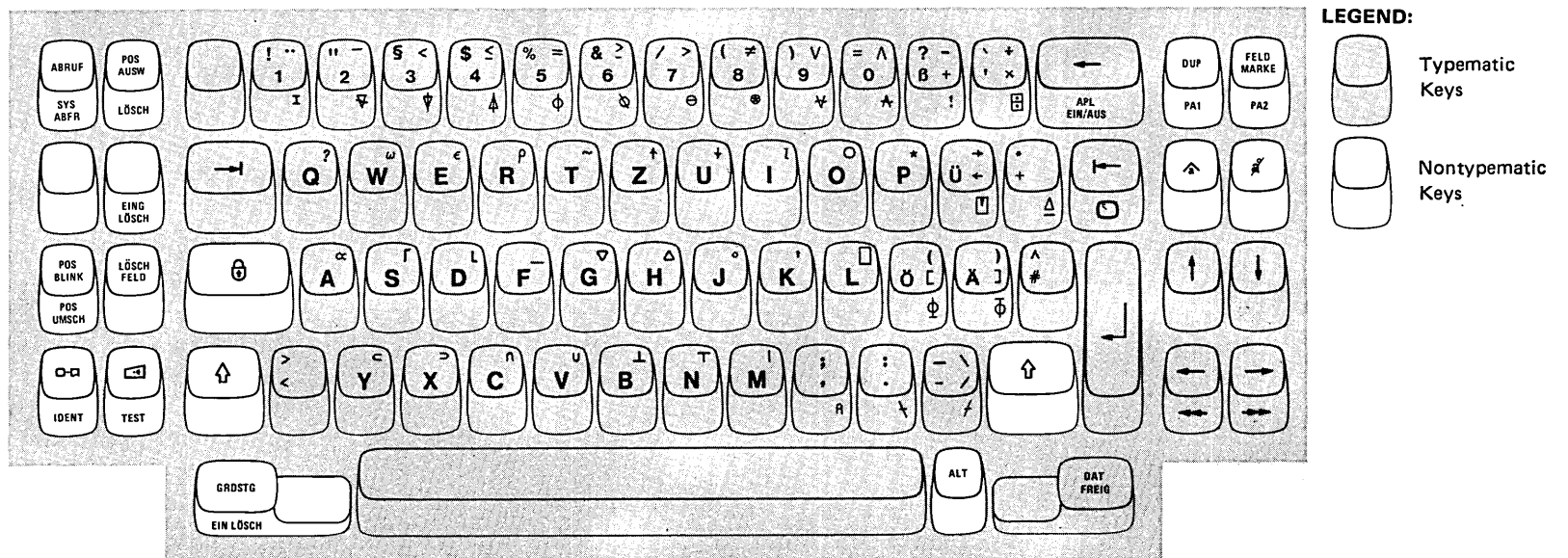
Model 932 87-Key Typewriter Keyboard: This keyboard has 48 data keys, 27 control keys, and a 12-key numeric pad that also contains the 24 program function keys. A decimal key and a tab forward key are part of the numeric keys on the keypad. Numeric keys are active in either uppercase or lowercase mode. When used with the ALT shift key, program function keys PF13–PF24 can be activated. *This keyboard is used only with terminals operating in a 3174 Subsystem Control Unit environment.* (See Figure 3-37.)

Keyboard Layouts

Figures 3-1 through 3-31 illustrate the 3276, 3278, and 3279 keyboard layouts for the various national languages. Figures 3-32 and 3-33 illustrate the attribute select and overlay keyboards, with English (U.S.) used as the sample language. Figures 3-34 through 3-37 illustrate the keyboards that are used only with terminals operating in a 3174 Subsystem Control Unit environment.

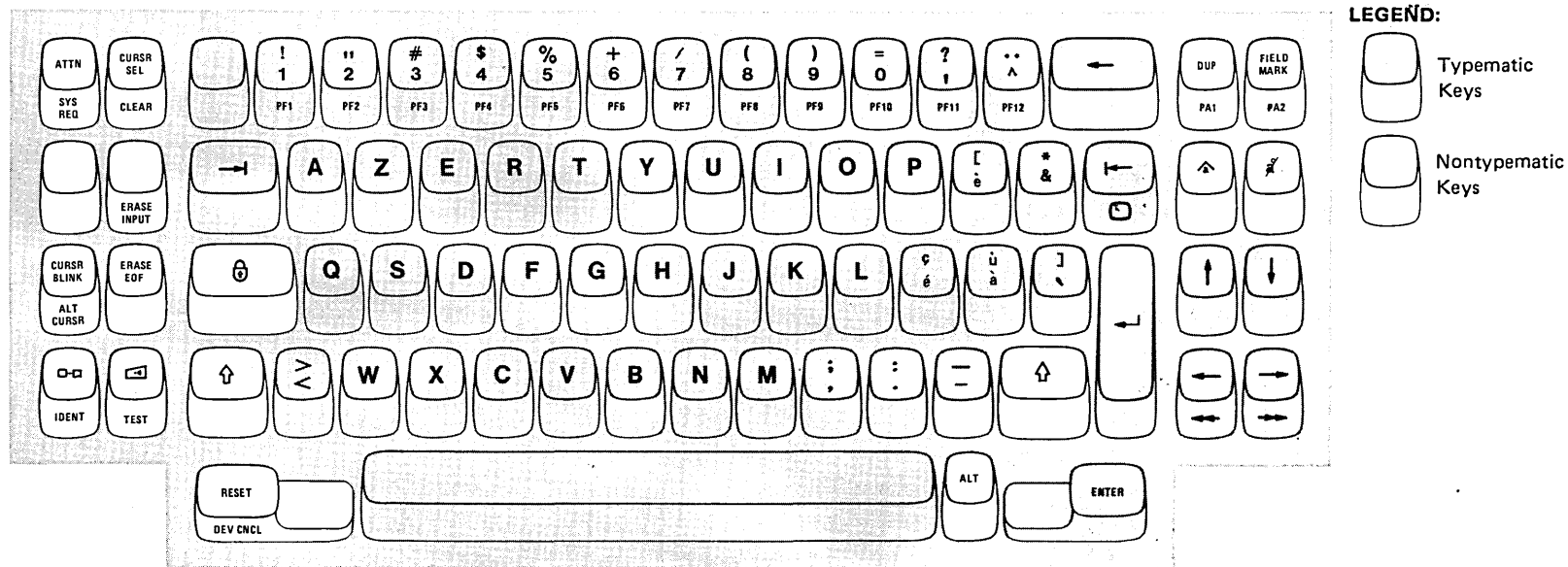


Data Entry Keypunch Keyboard

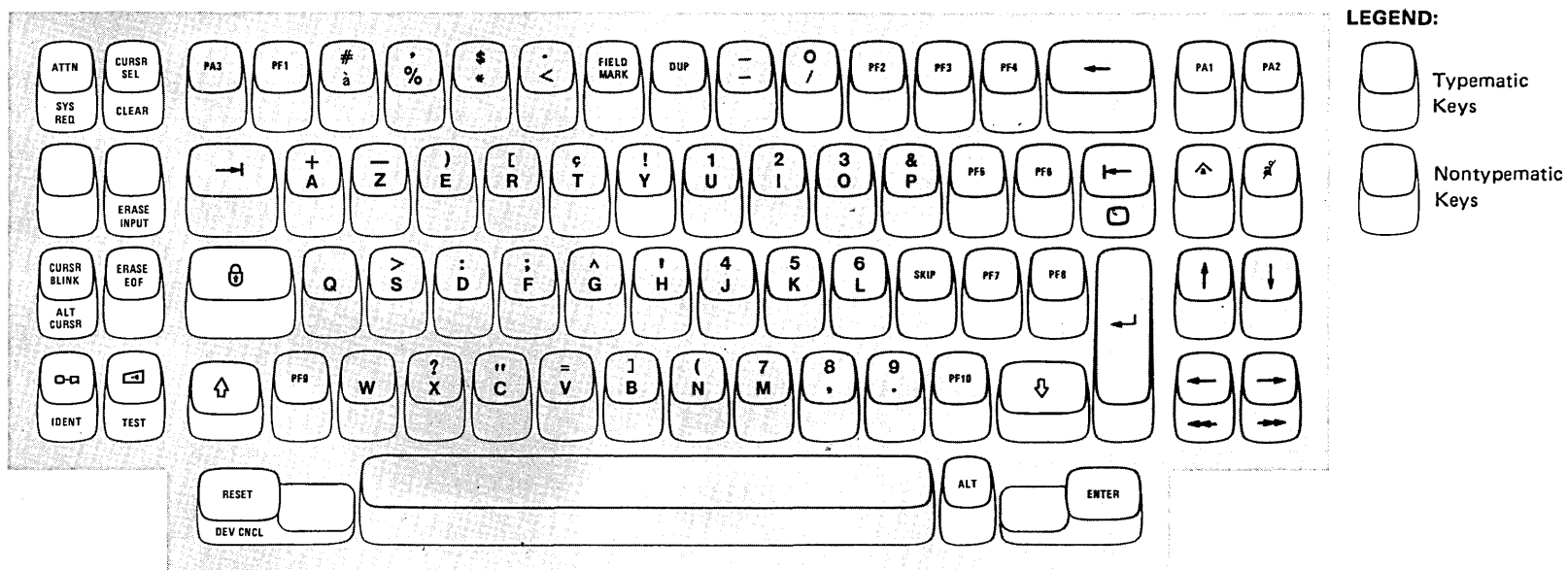


APL Keyboard

Figure 3-1 (Part 2 of 2). Austrian/German Keyboards for 3276, 3278, and 3279 Display Stations

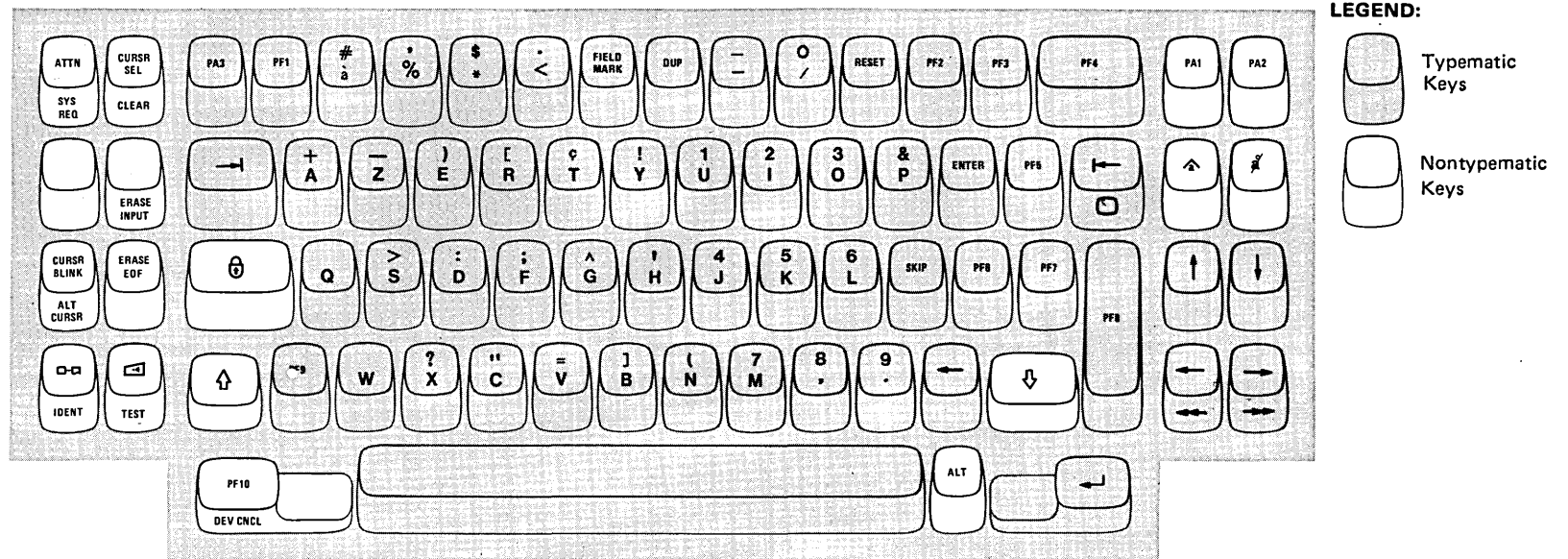


Typewriter Keyboard

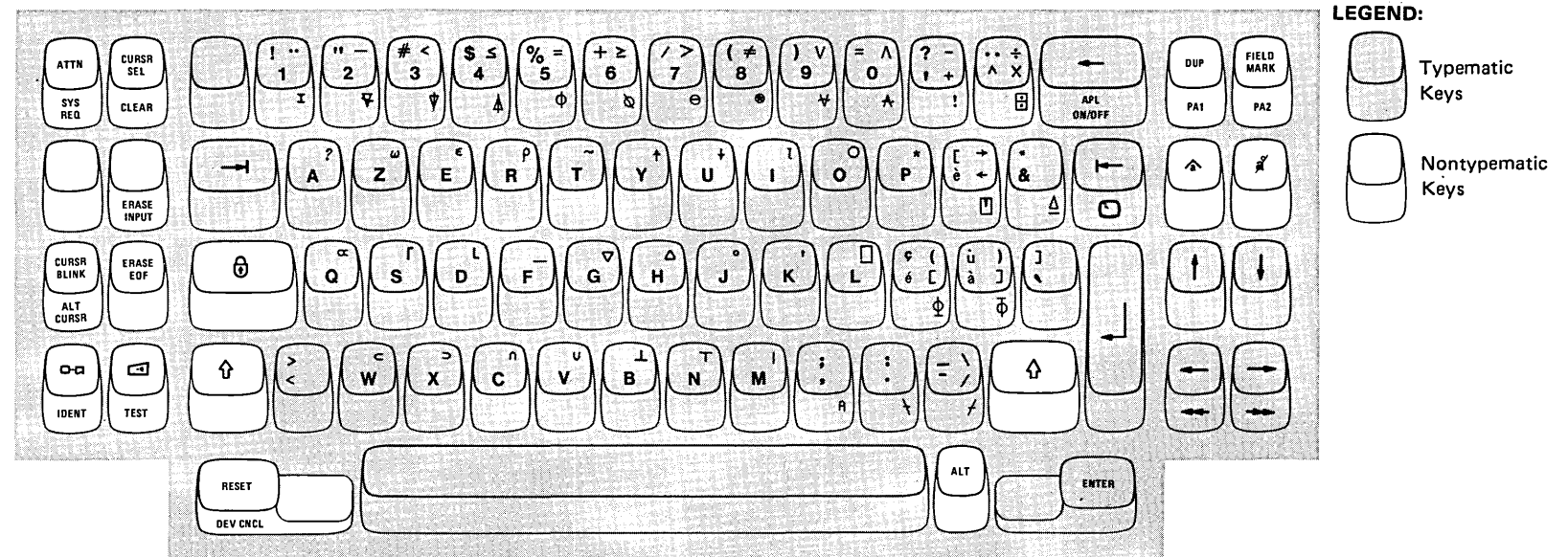


Data Entry Keyboard

Figure 3-2 (Part 1 of 2). Belgian Keyboards for 3276, 3278, and 3279 Display Stations



Data Entry Keypunch Keyboard



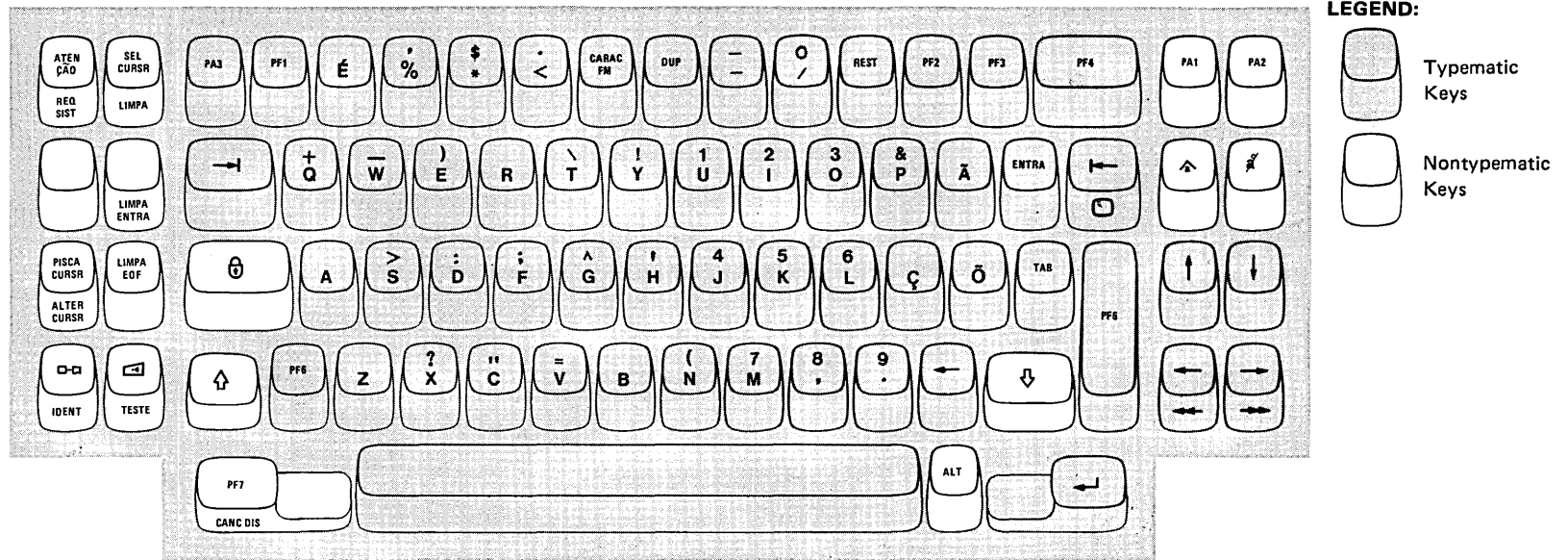
APL Keyboard

Figure 3-2 (Part 2 of 2). Belgian Keyboards for 3276, 3278, and 3279 Display Stations

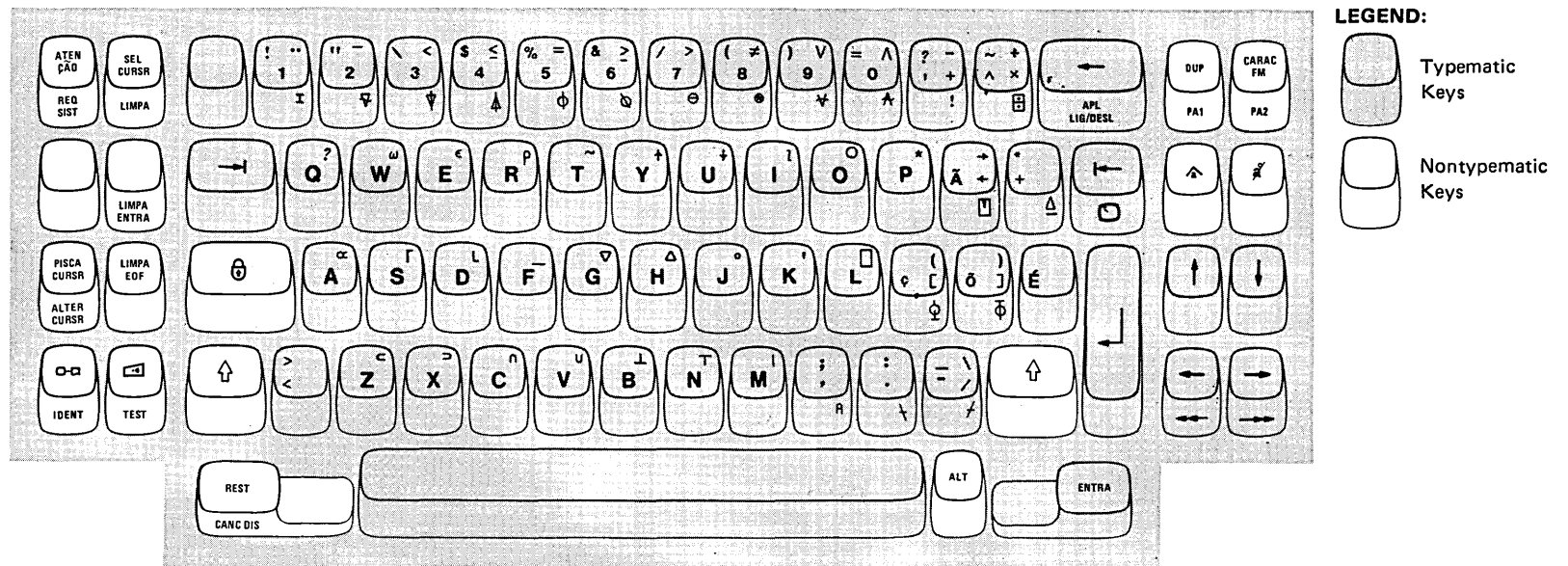
[illegible]

Data Entry Keyboard

Figure 3-3 (Part 1 of 2). Brazilian Keyboards for 3276, 3278, and 3279 Display Stations

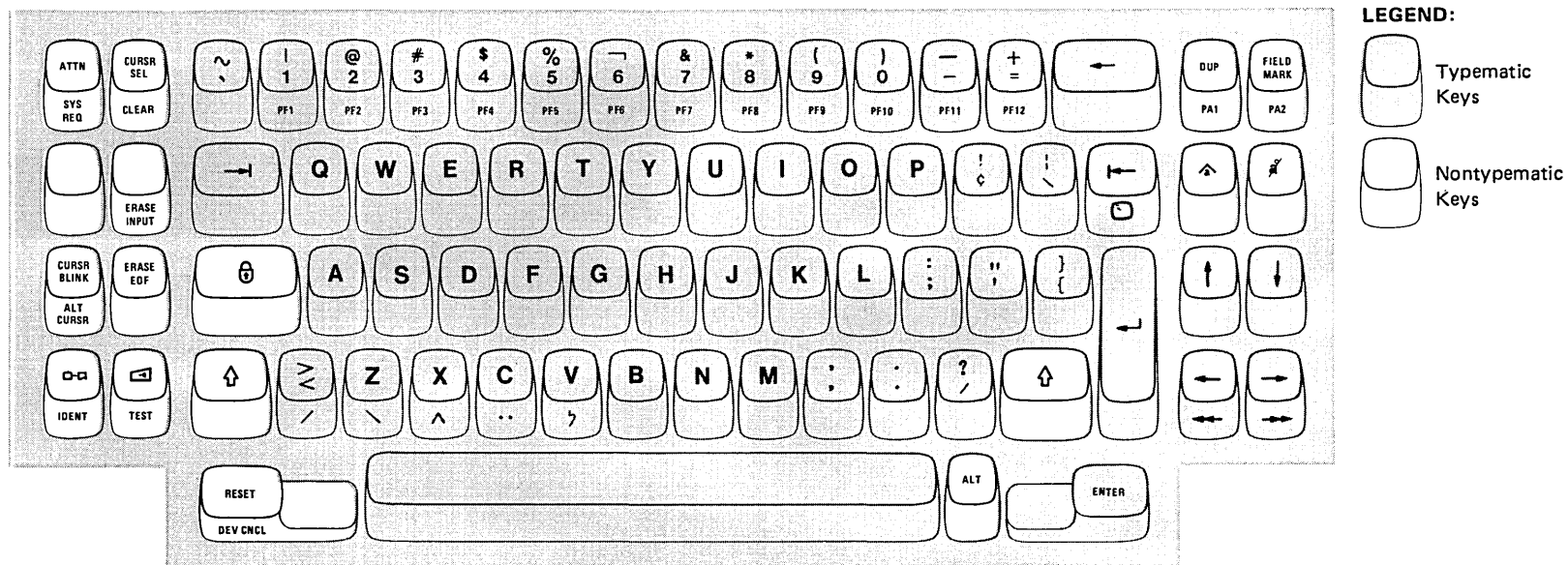


Data Entry Key Punch Keyboard

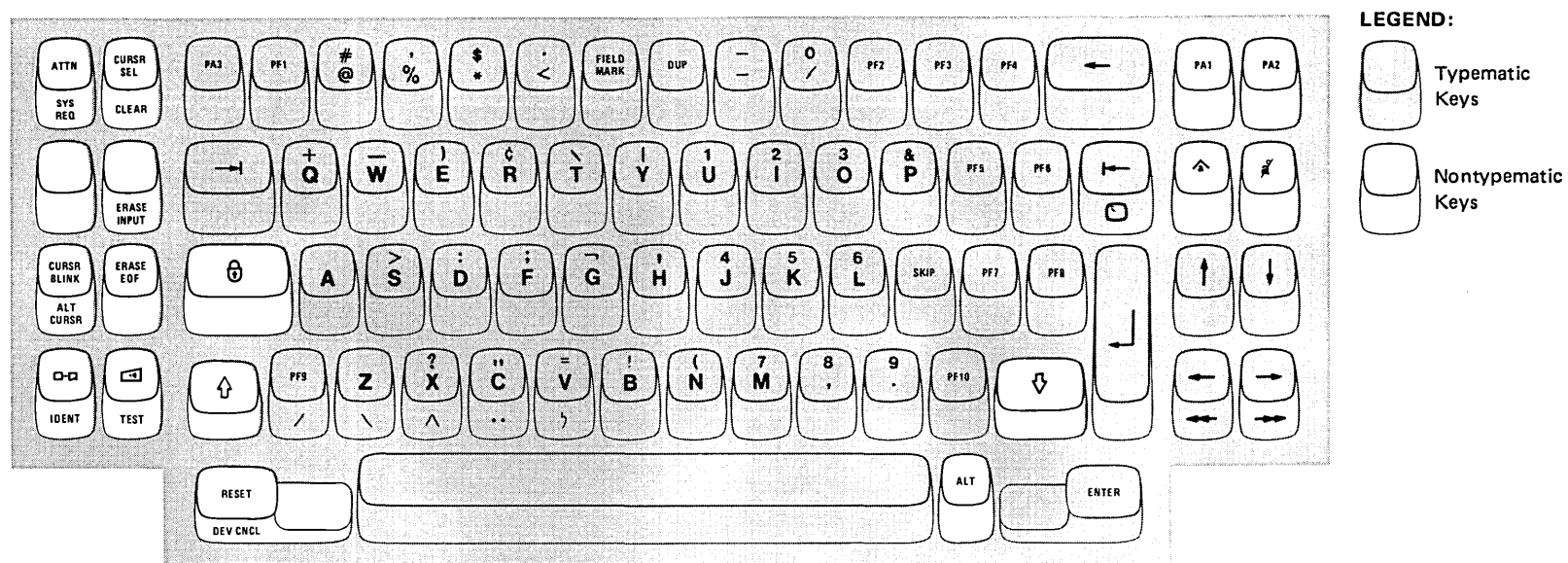


APL Keyboard

Figure 3-3 (Part 2 of 2). Brazilian Keyboards for 3276, 3278, and 3279 Display Stations

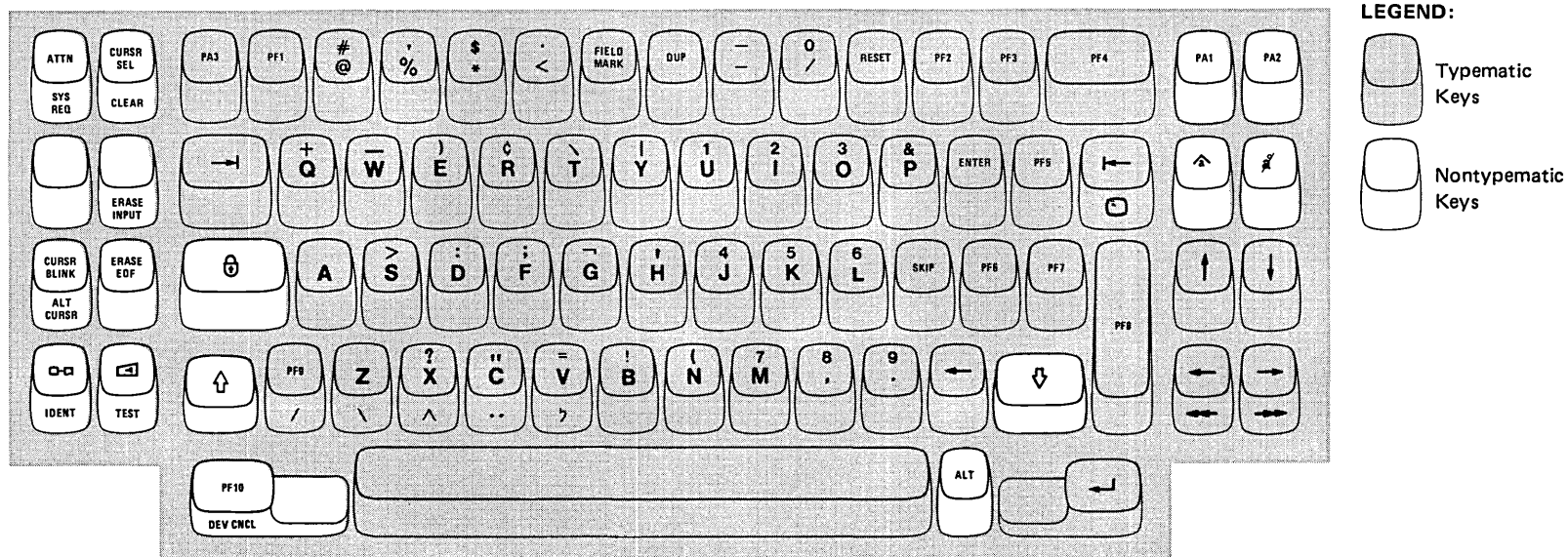


Typewriter Keyboard

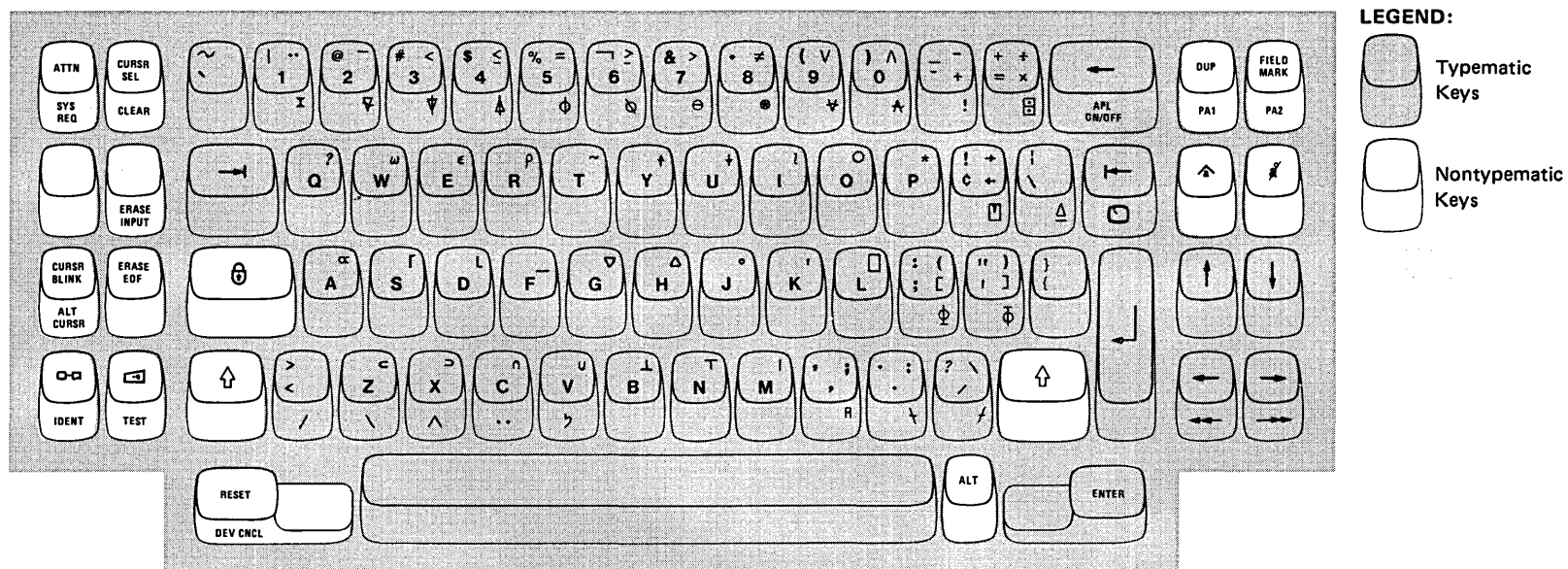


Data Entry Keyboard

Figure 3-4 (Part 1 of 3). Canadian-English Bilingual Keyboards for 3276, 3278, and 3279 Display Stations

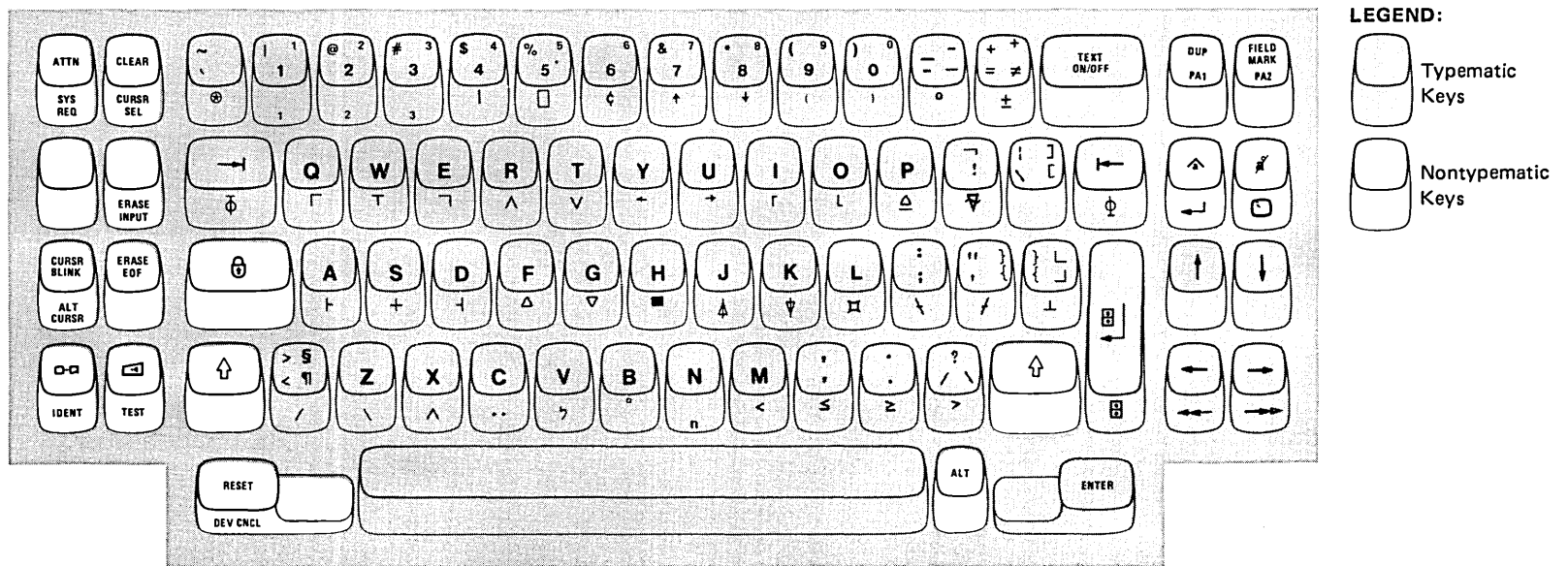


Data Entry Keypunch Keyboard



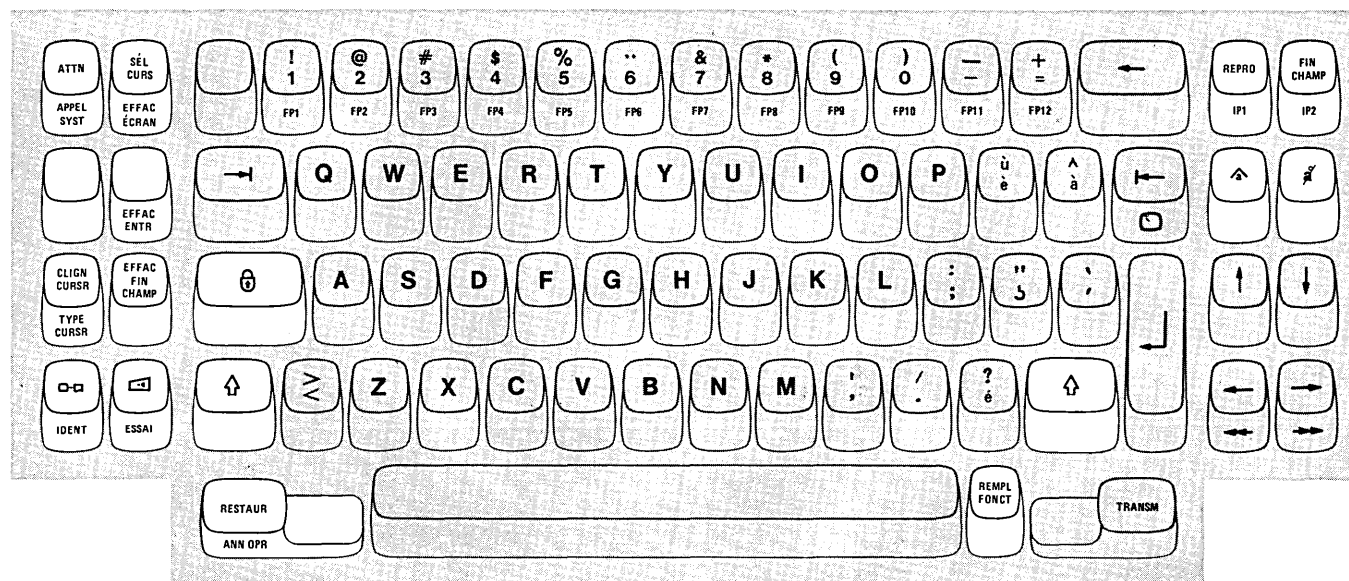
APL Keyboard

Figure 3-4 (Part 2 of 3). Canadian-English Bilingual Keyboards for 3276, 3278, and 3279 Display Stations

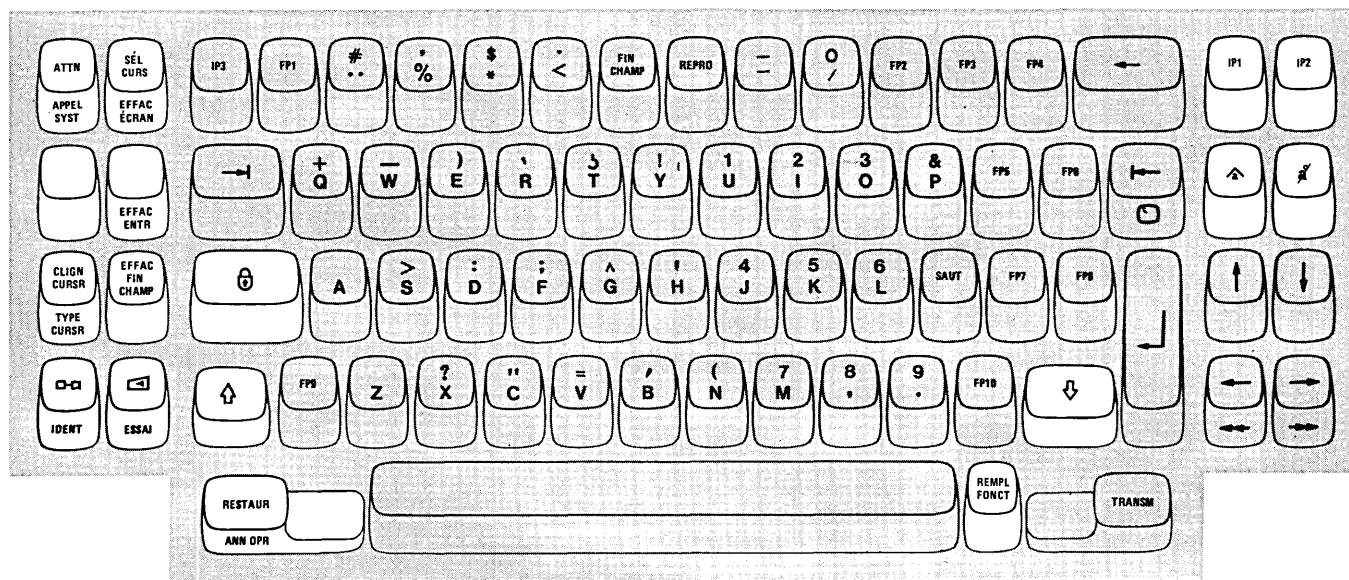


Text Keyboard

Figure 3-4 (Part 3 of 3). Canadian-English Bilingual Keyboards for 3276, 3278, and 3279 Display Stations

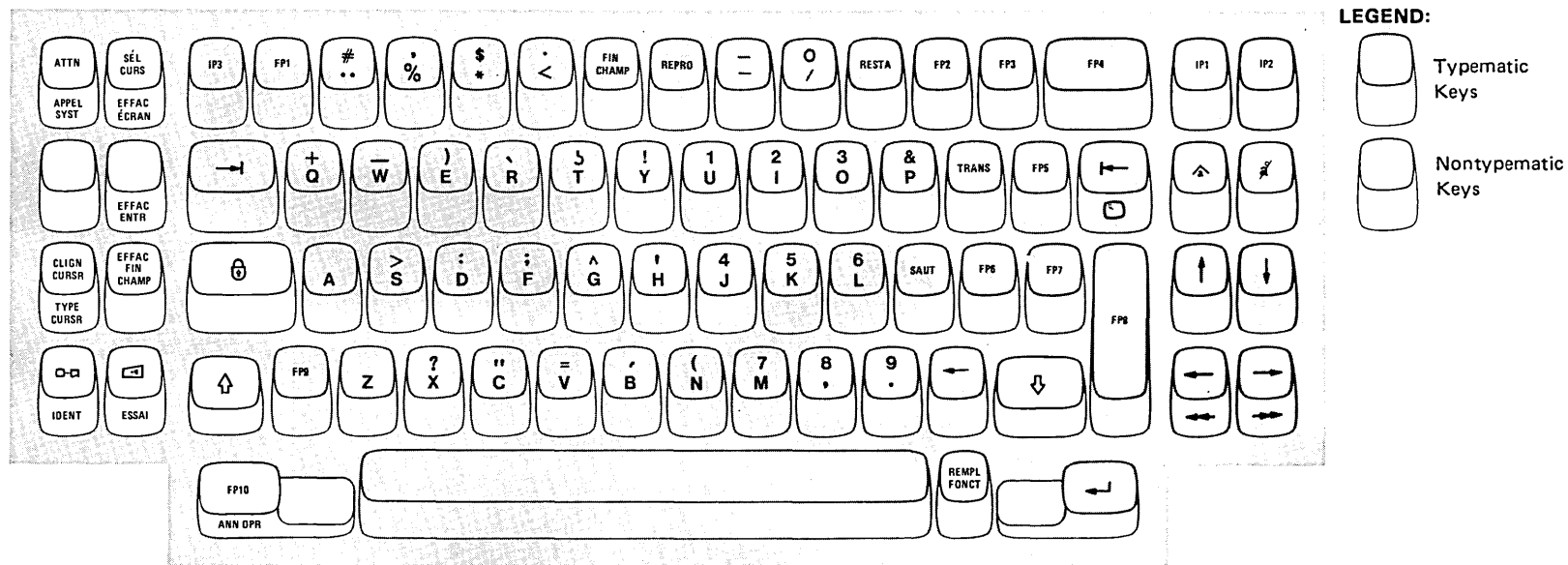


Typewriter Keyboard

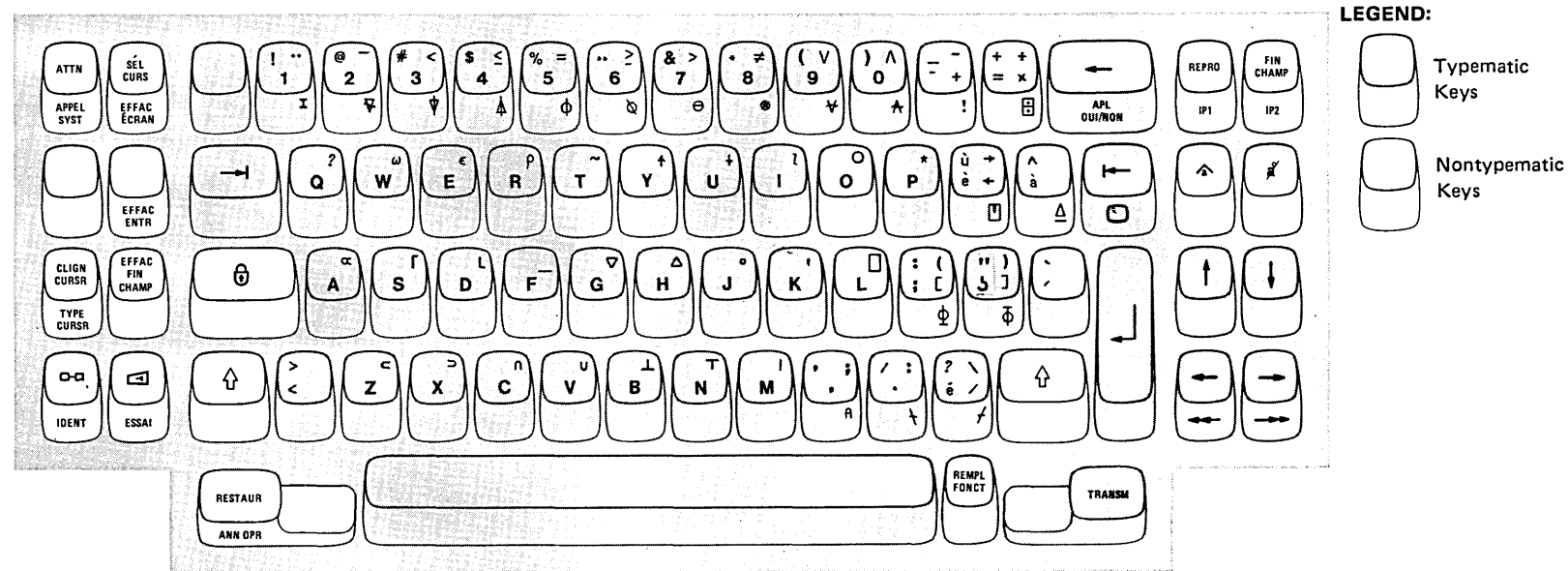


Data Entry Keyboard

Figure 3-5 (Part 1 of 2). Canadian-French Keyboards for 3276, 3278, and 3279 Display Stations

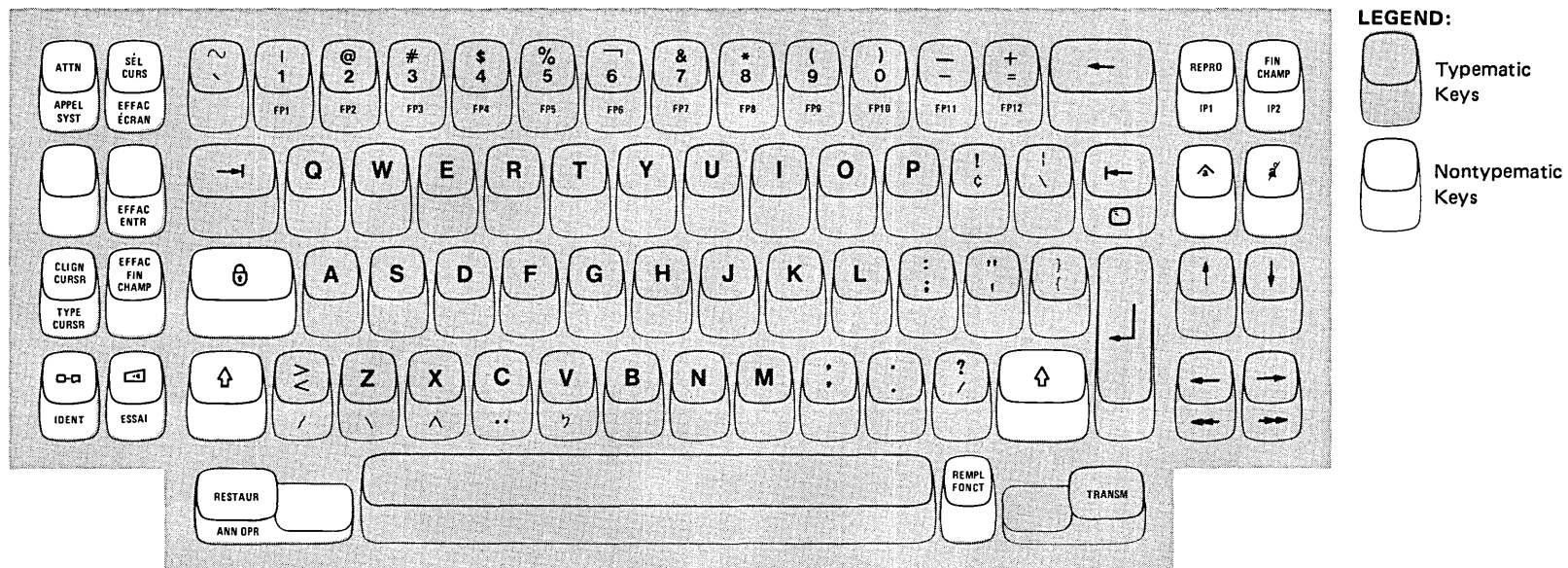


Data Entry Keypunch Keyboard

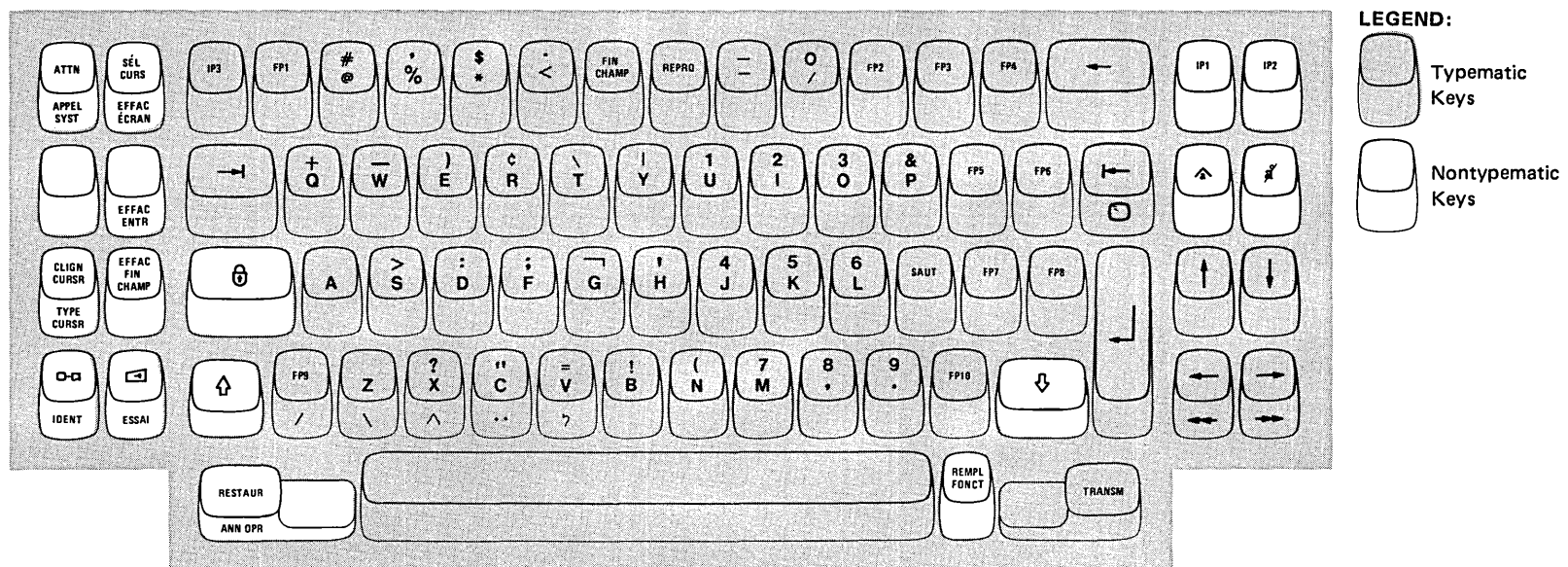


APL Keyboard

Figure 3-5 (Part 2 of 2). Canadian-French Keyboards for 3276, 3278, and 3279 Display Stations



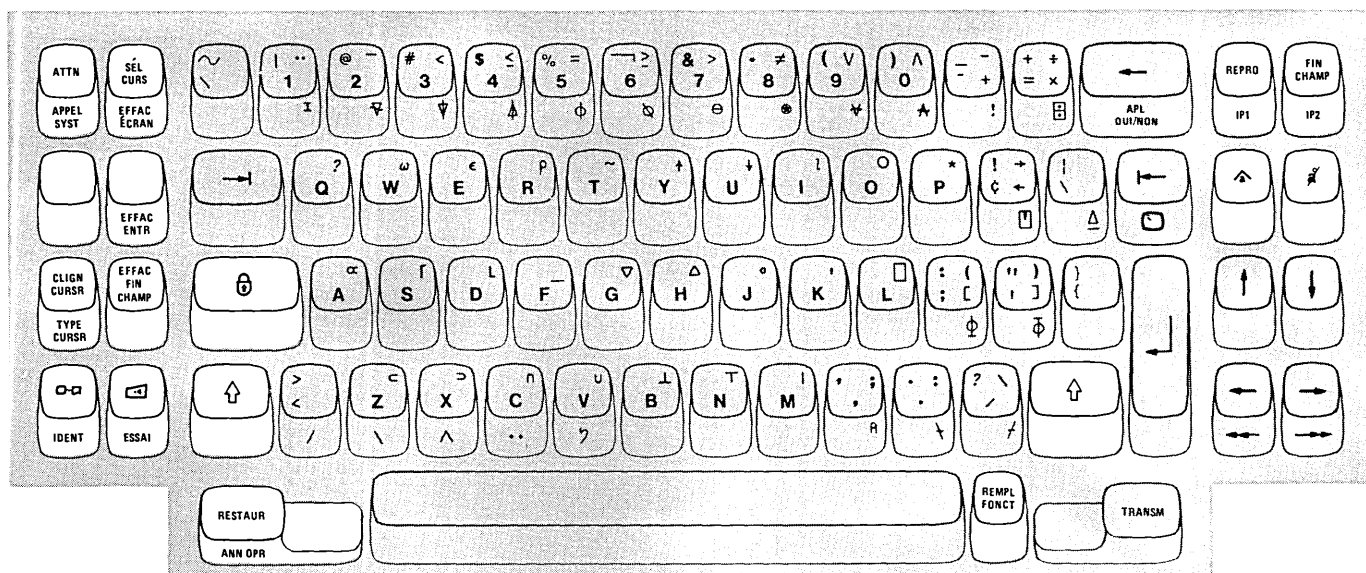
Typewriter Keyboard



Data Entry Keyboard

Figure 3-6 (Part 1 of 3). Canadian-French Bilingual Keyboards for 3276, 3278, and 3279 Display Stations

Data Entry Keypunch Keyboard

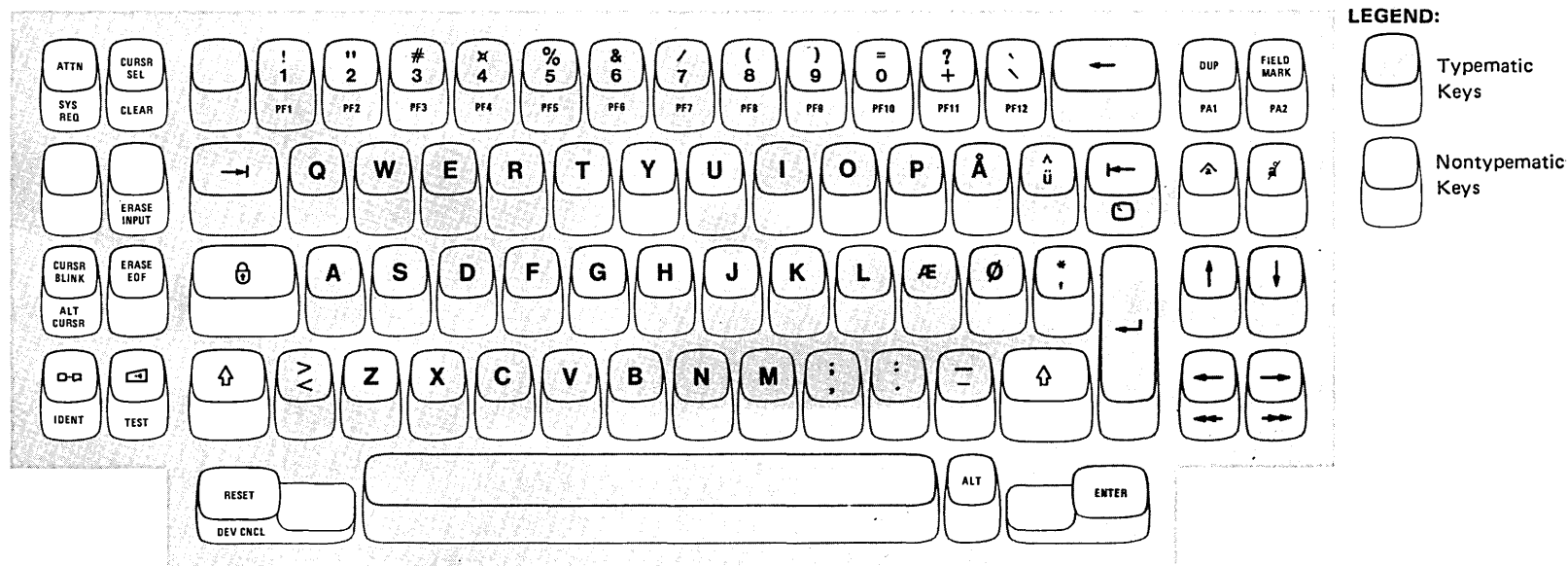


APL Keyboard

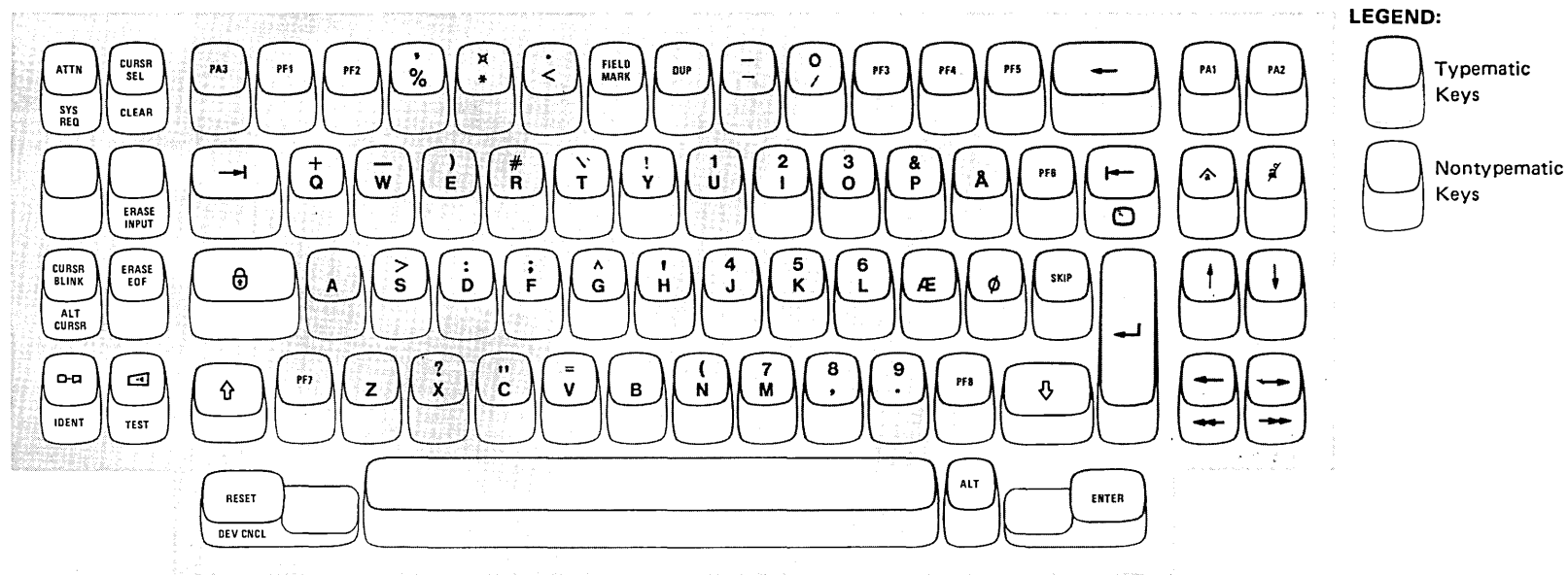
Figure 3-6 (Part 2 of 3). Canadian-French Bilingual Keyboards for 3276, 3278, and 3279 Display Stations

Figure 3-6 (Part 3 of 3). Canadian-French Bilingual Keyboards for 3276, 3278, and 3279 Display Stations

Figure 3-6 (Part 3 of 3). Canadian-French Bilingual Keyboards for 3276, 3278, and 3279 Display Stations

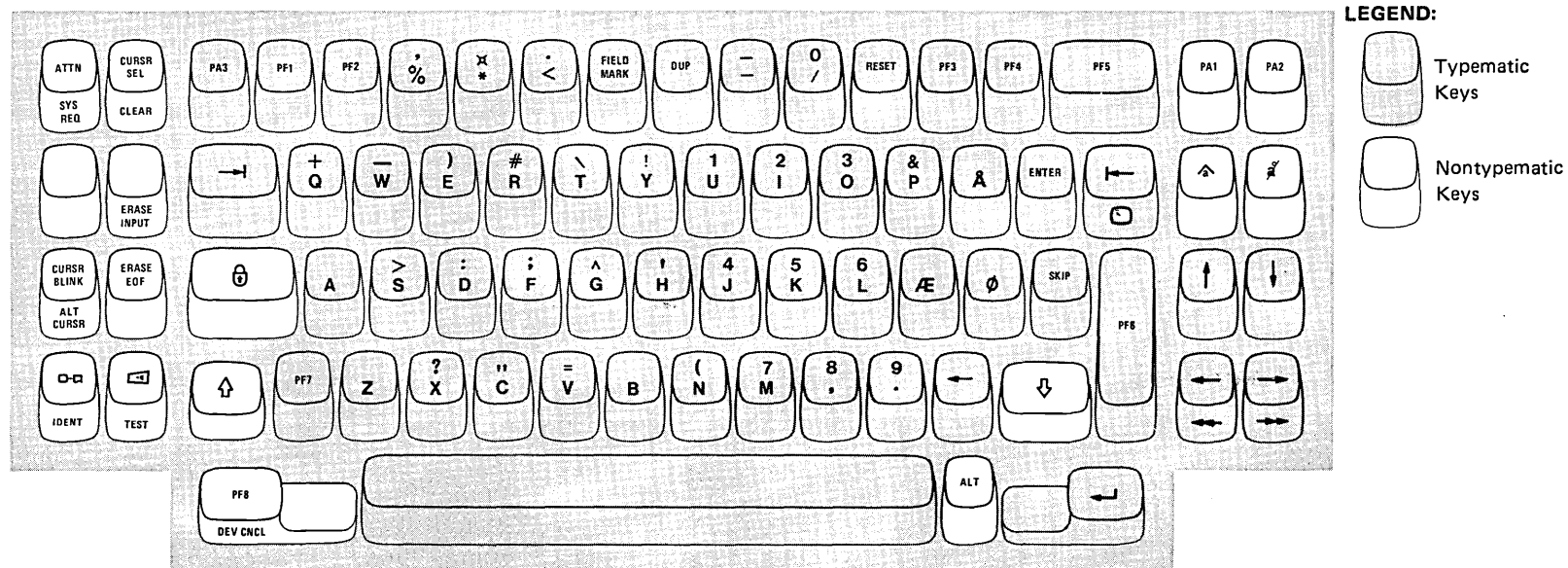


Typewriter Keyboard

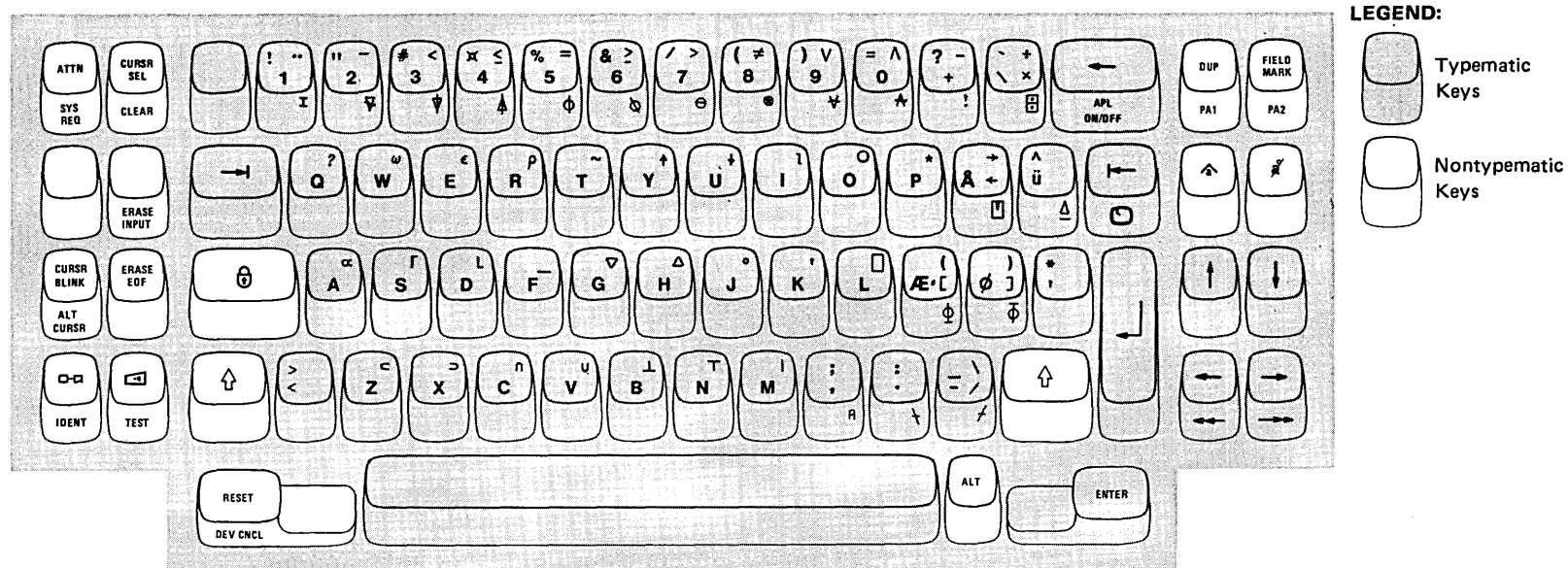


Data Entry Keyboard

Figure 3-7 (Part 1 of 2). Danish Keyboards for 3276, 3278, and 3279 Display Stations

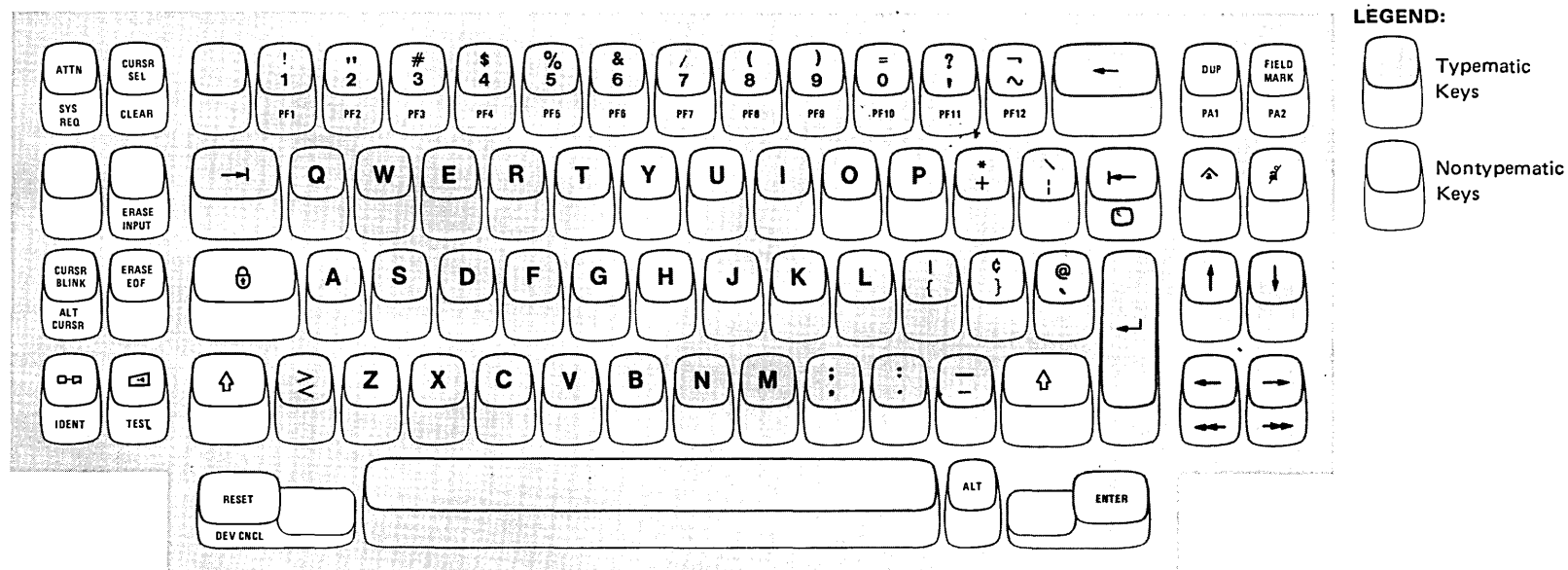


Data Entry Keypunch Keyboard

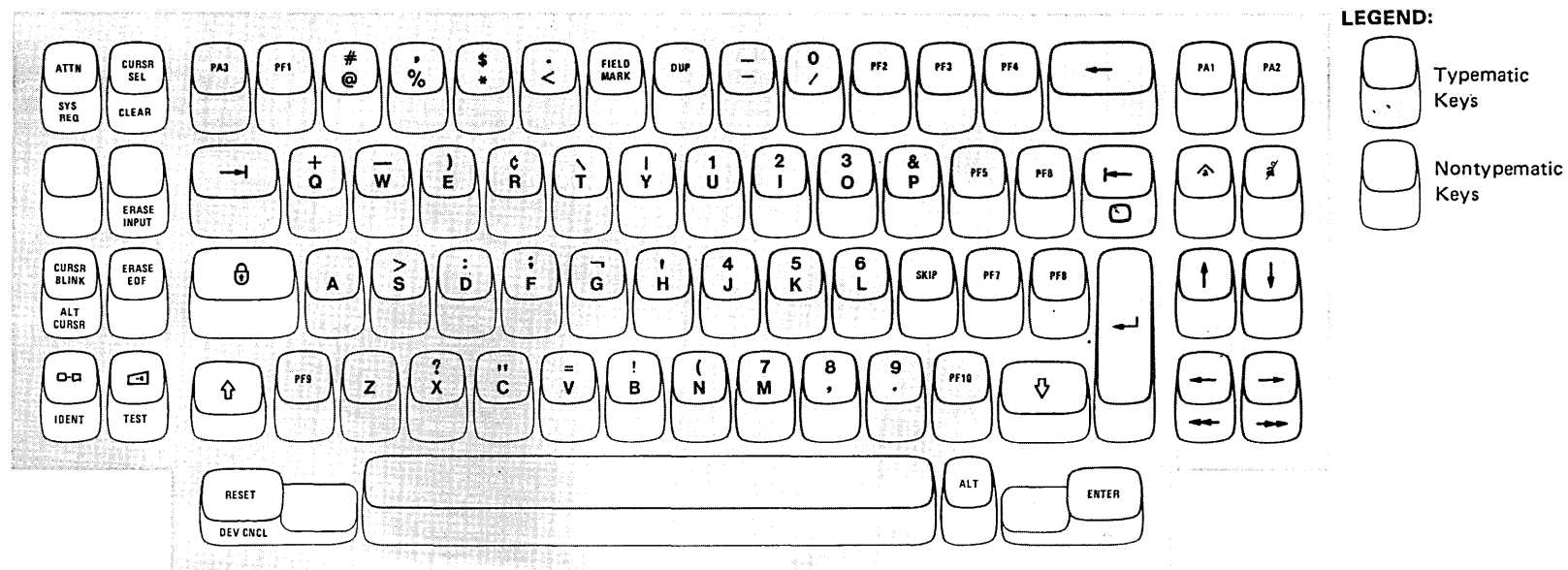


APL Keyboard

Figure 3-7 (Part 2 of 2). Danish Keyboards for 3276, 3278, and 3279 Display Stations

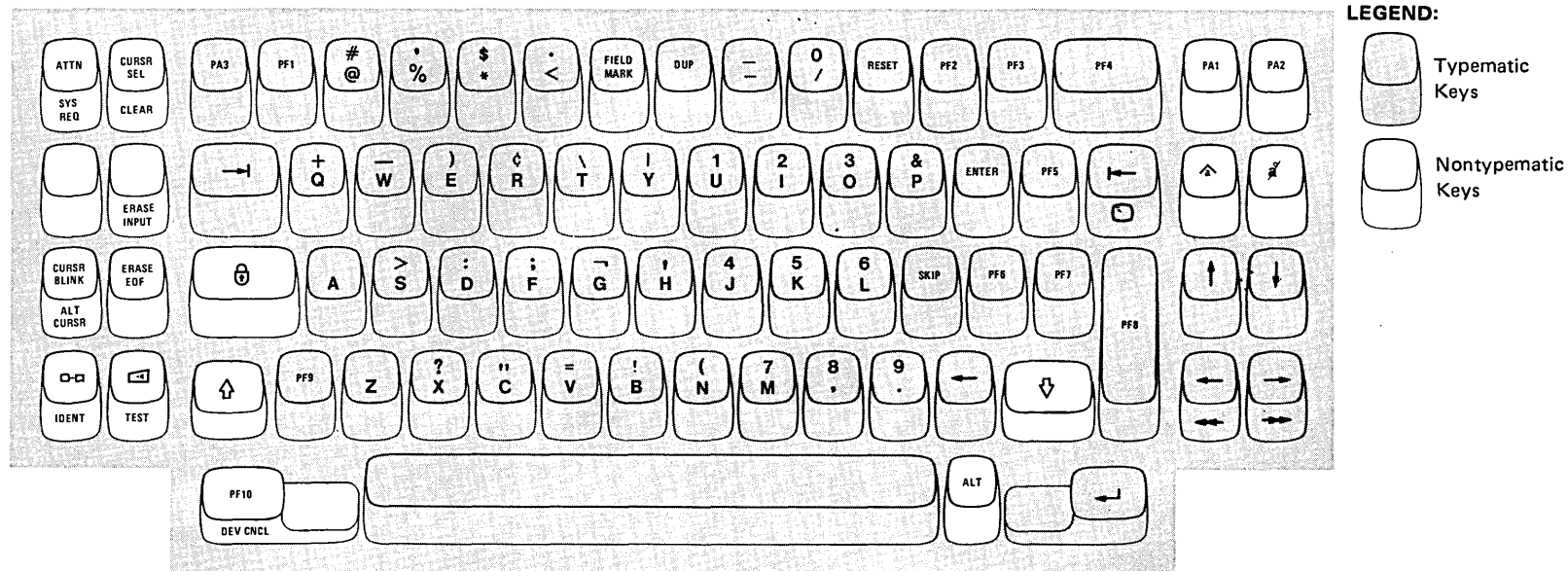


Typewriter Keyboard

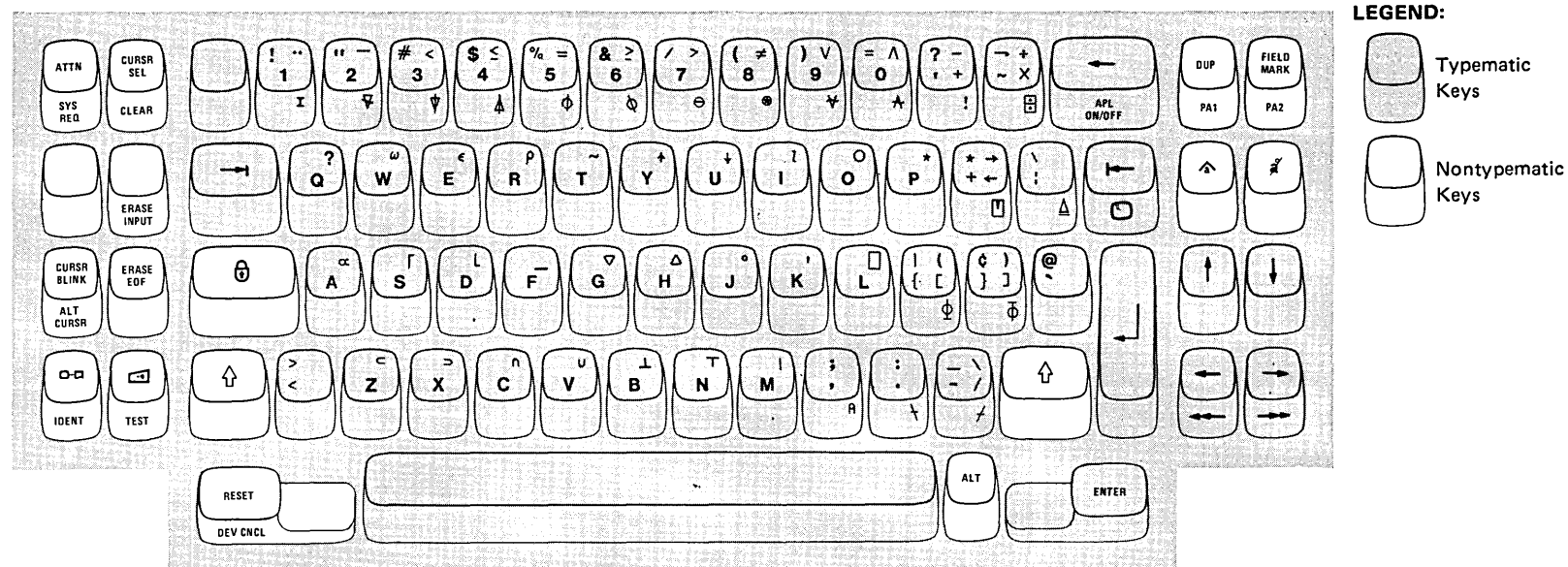


Data Entry Keyboard

Figure 3-8 (Part 1 of 2). EBCDIC (WT) Keyboards for 3276, 3278, and 3279 Display Stations

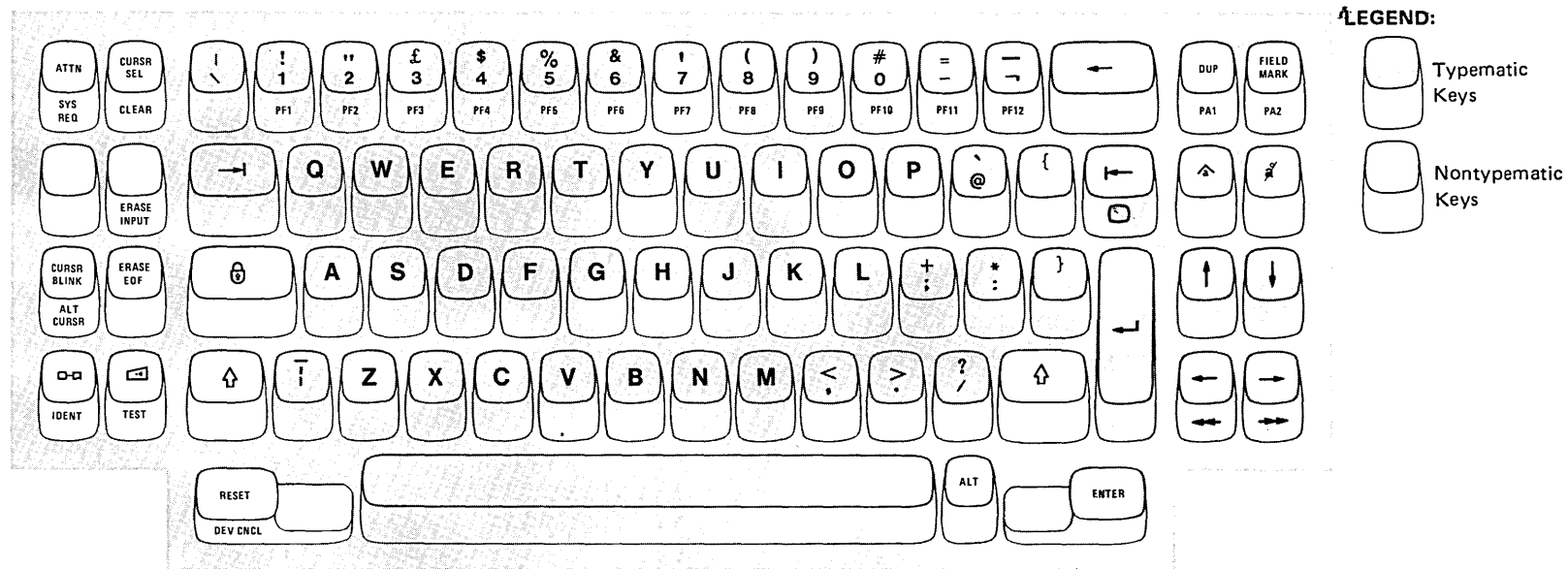


Data Entry Keypunch Keyboard

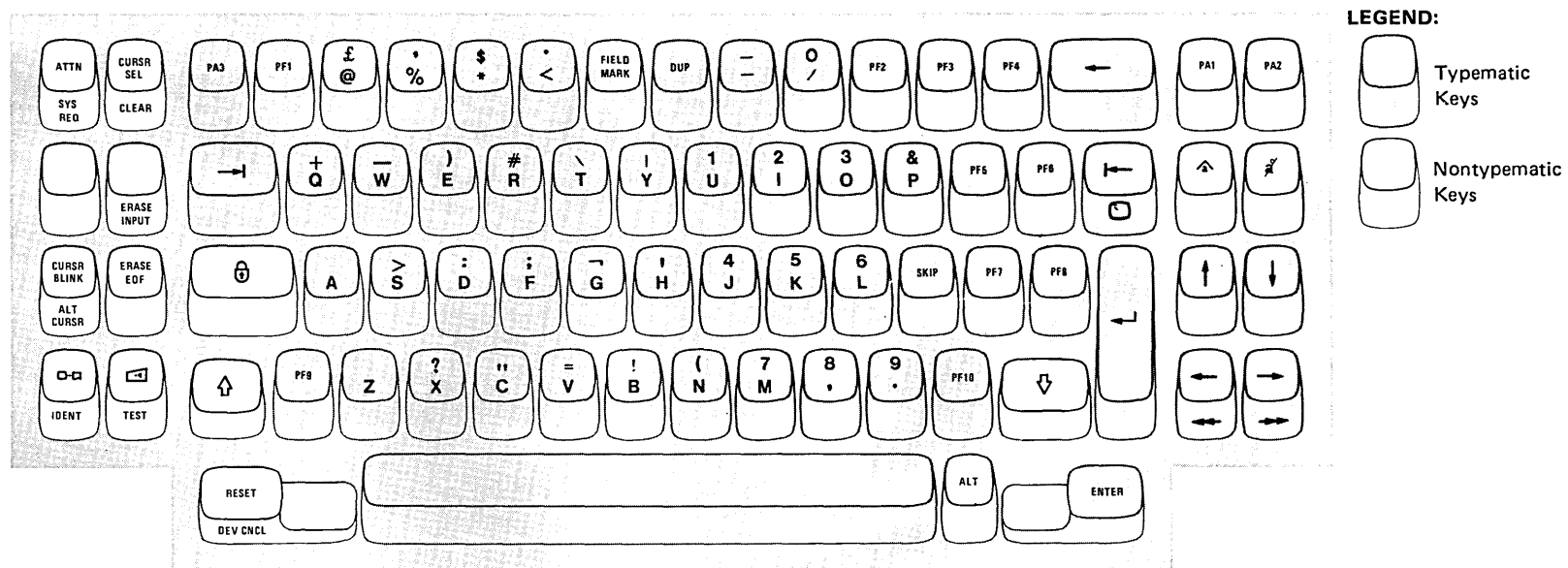


APL Keyboard

Figure 3-8 (Part 2 of 2). EBCDIC (WT) Keyboards for 3276, 3278, and 3279 Display Stations

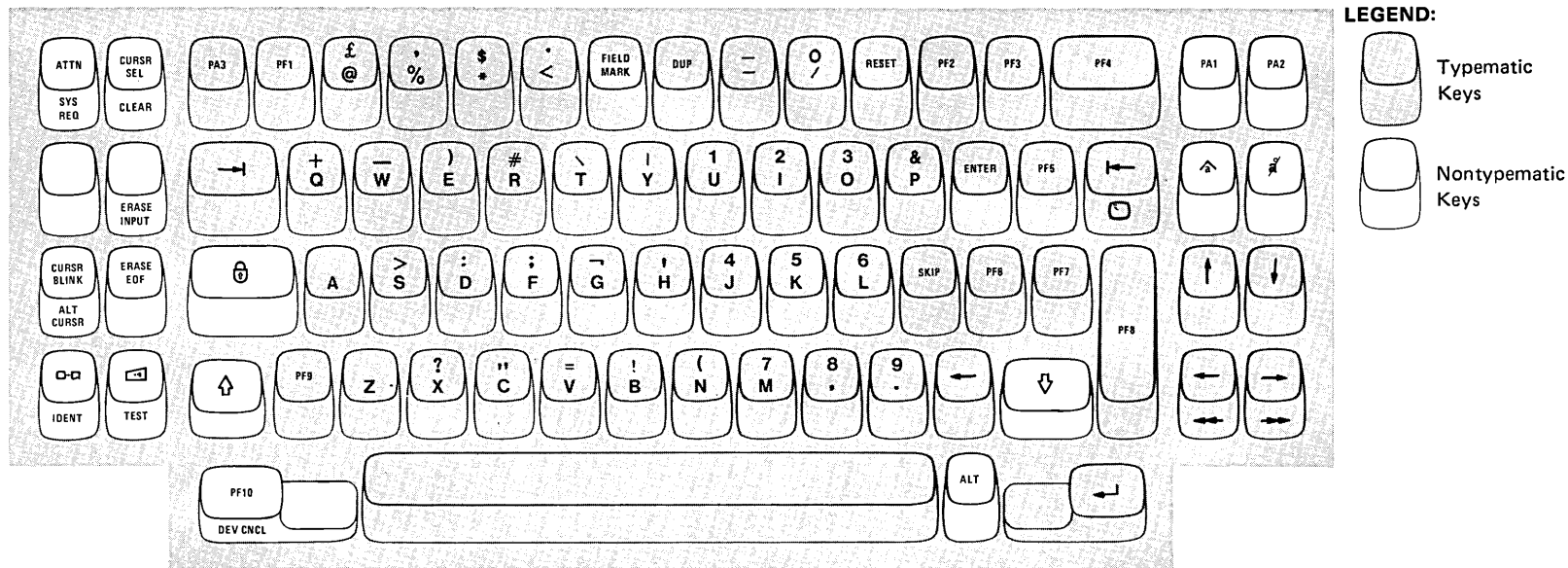


Typewriter Keyboard

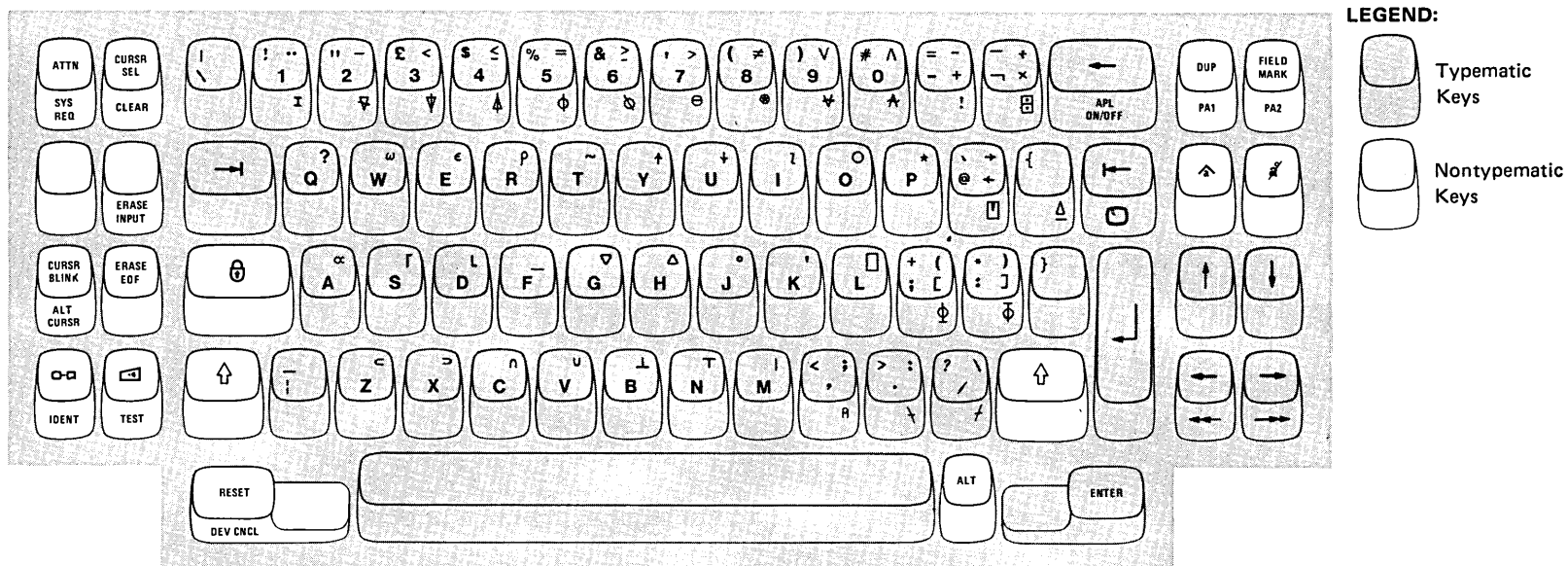


Data Entry Keyboard

Figure 3-9 (Part 1 of 2). English (U.K.) Keyboards for 3276, 3278, and 3279 Display Stations

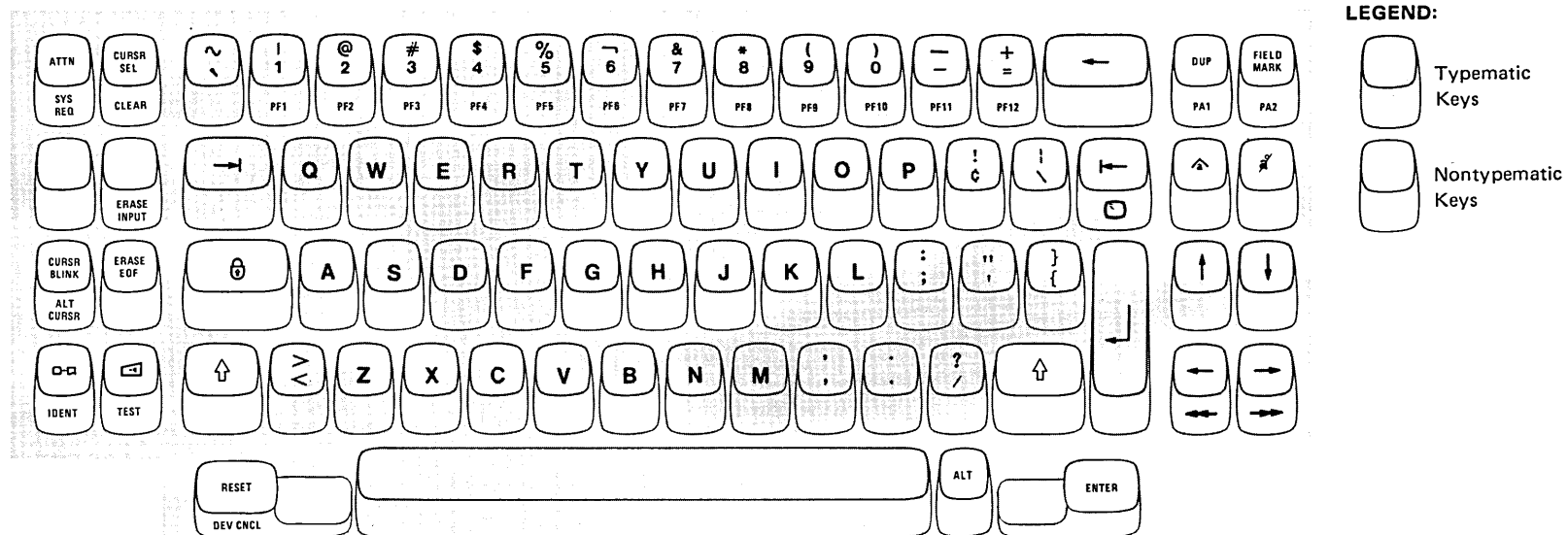


Data Entry Keypunch Keyboard

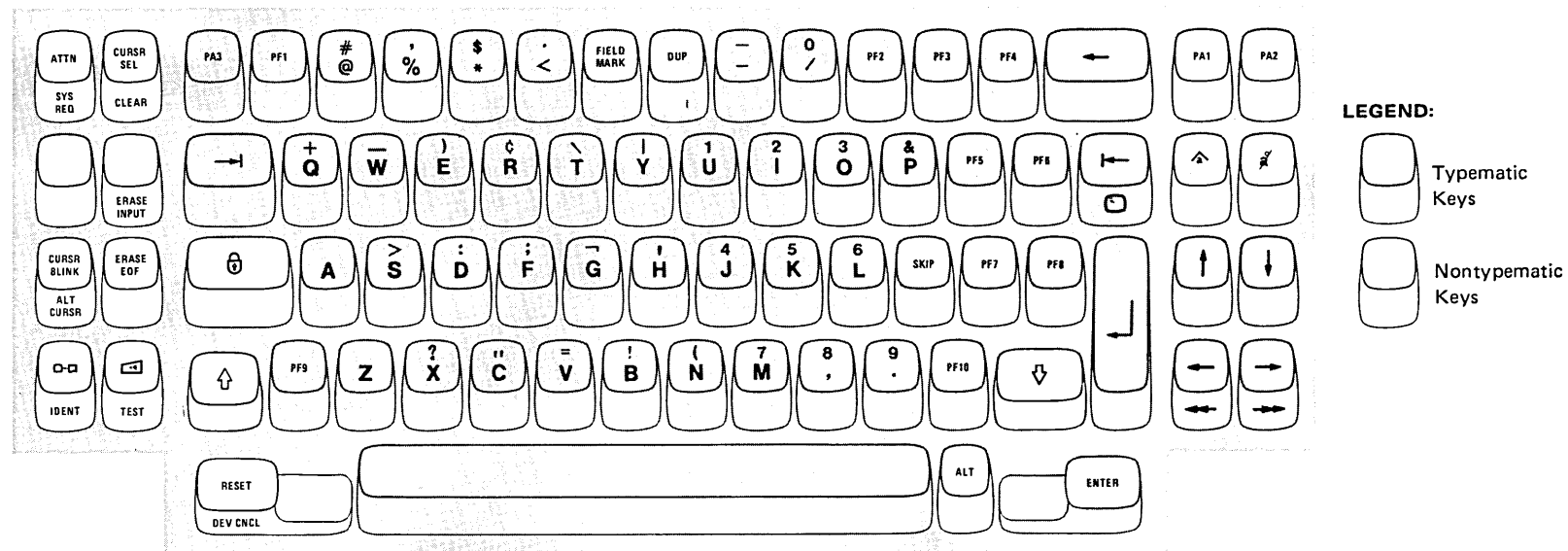


APL Keyboard

Figure 3-9 (Part 2 of 2). English (U.K.) Keyboards for 3276, 3278, and 3279 Display Stations

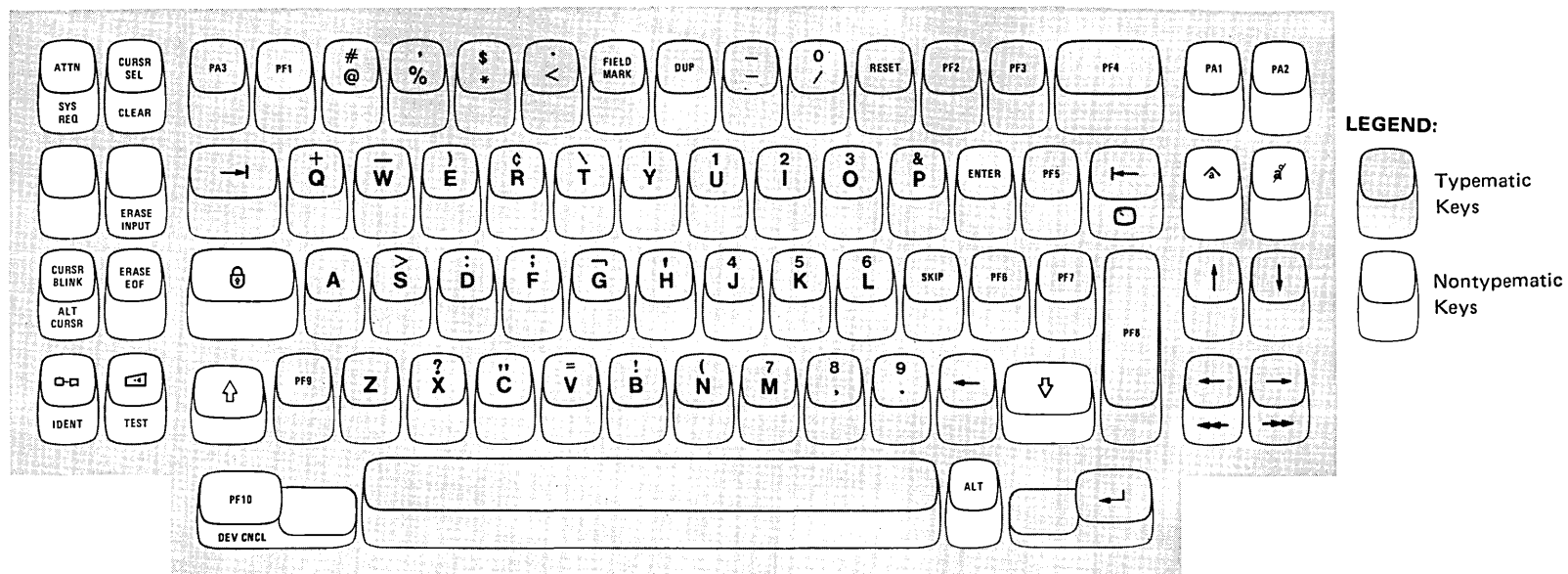


Typewriter Keyboard

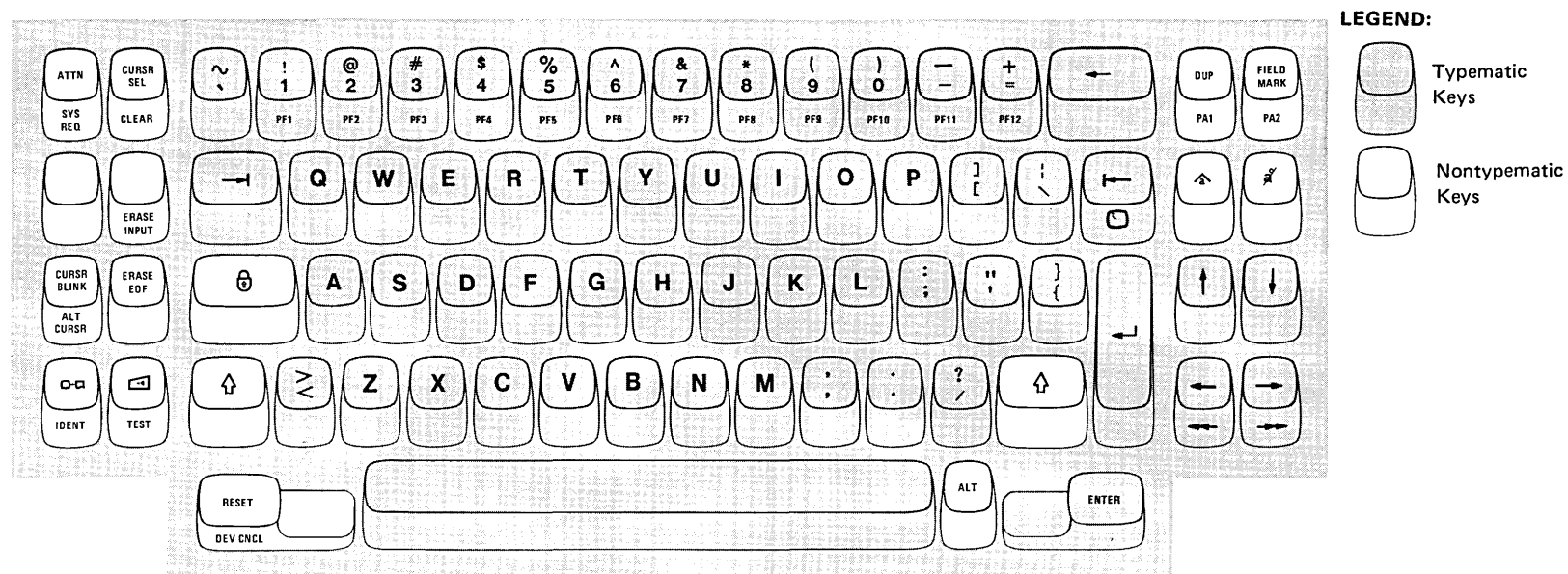


Data Entry Keyboard

Figure 3-10 (Part 1 of 3). English (U.S.) Keyboards for 3276, 3278, and 3279 Display Stations

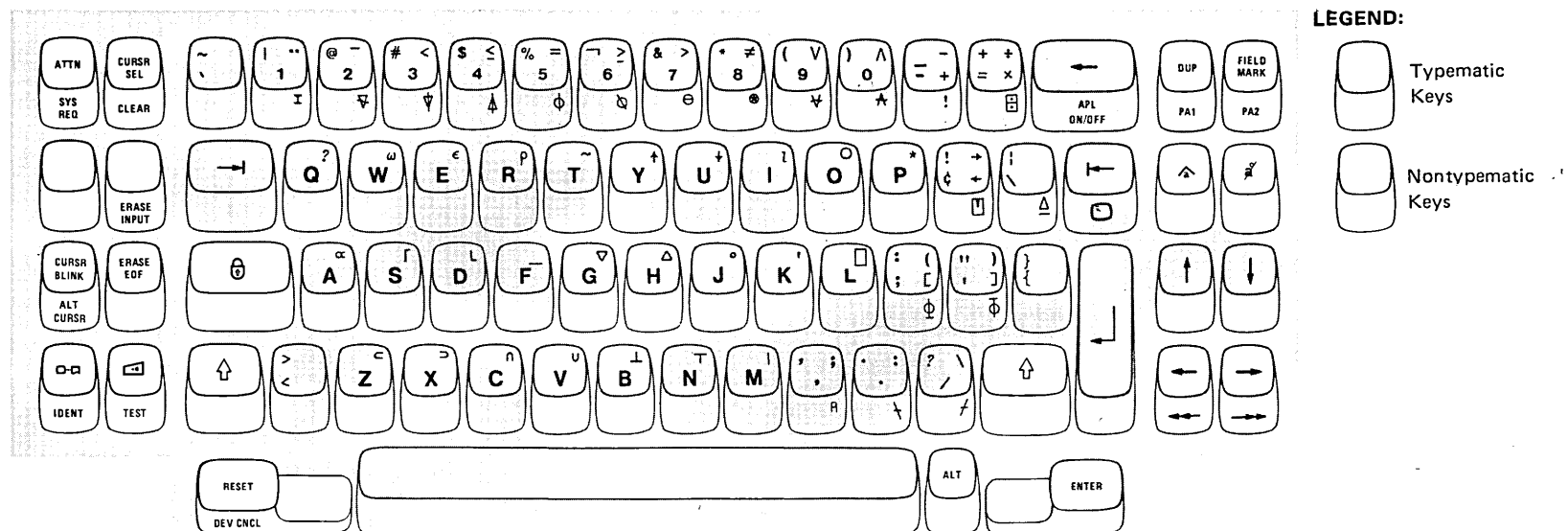


Data Entry Keypunch Keyboard

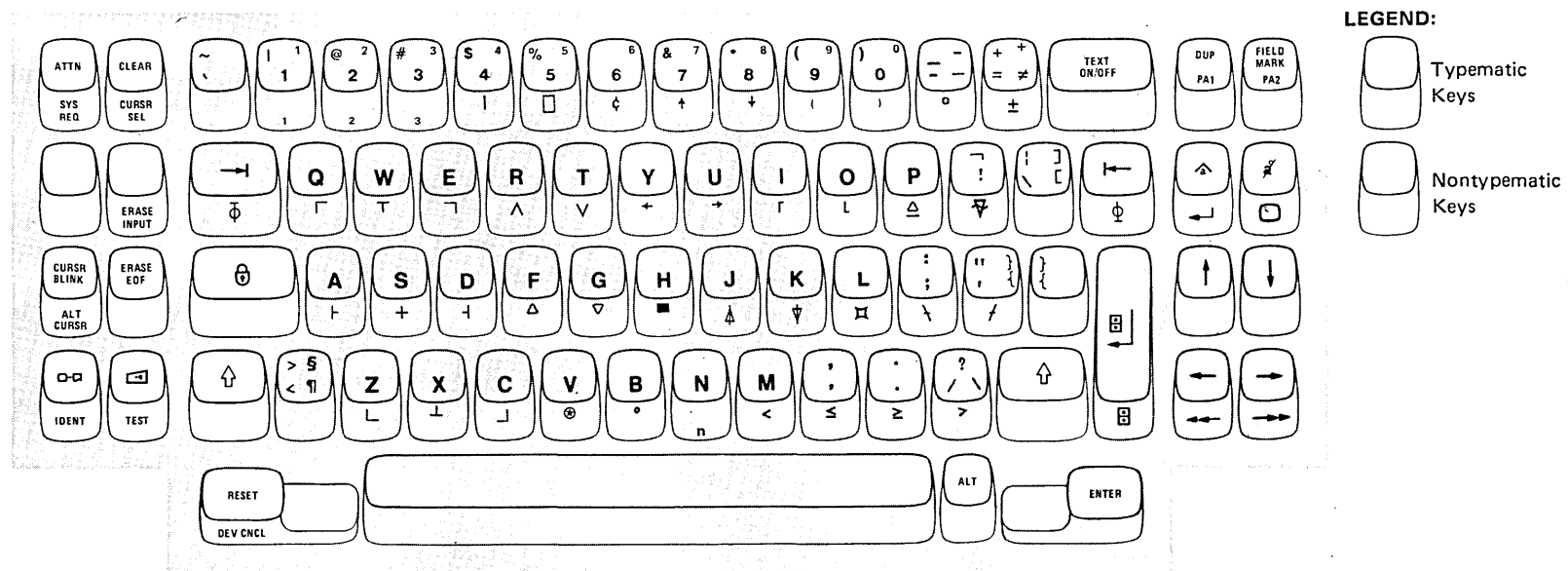


ASCII Typewriter Keyboard

Figure 3-10 (Part 2 of 3). English (U.S.) Keyboards for 3276, 3278, and 3279 Display Stations

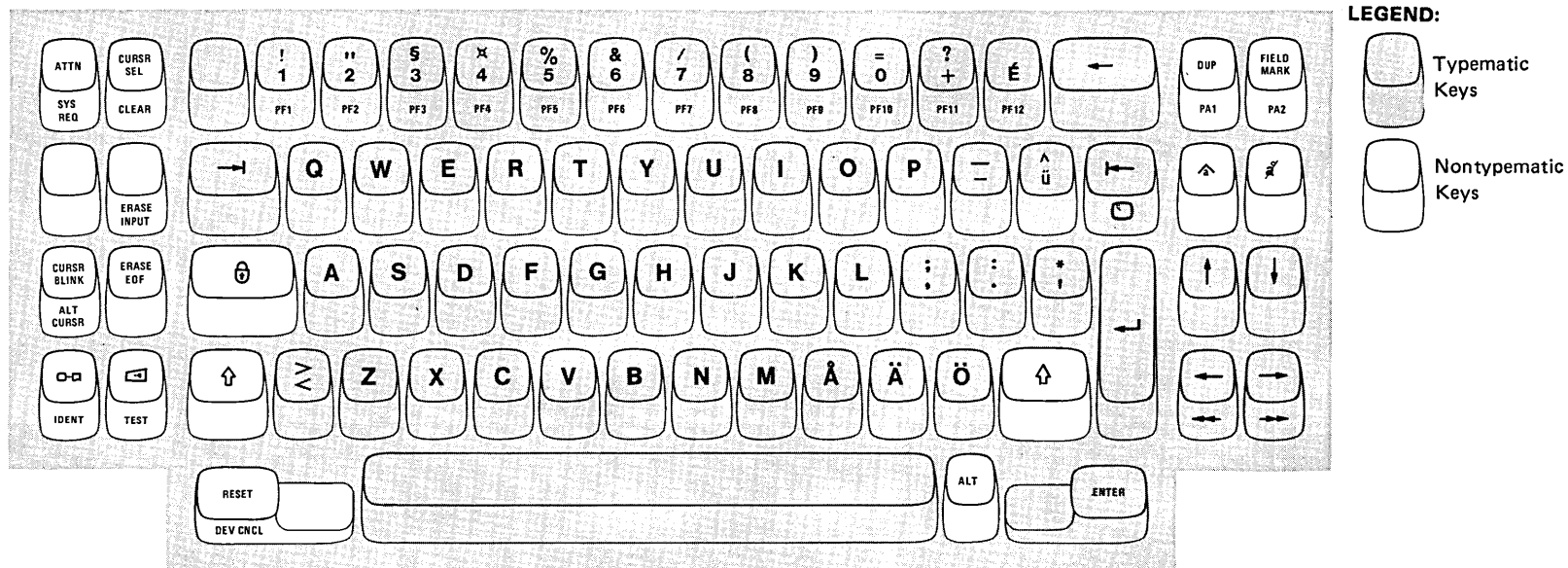


APL Keyboard

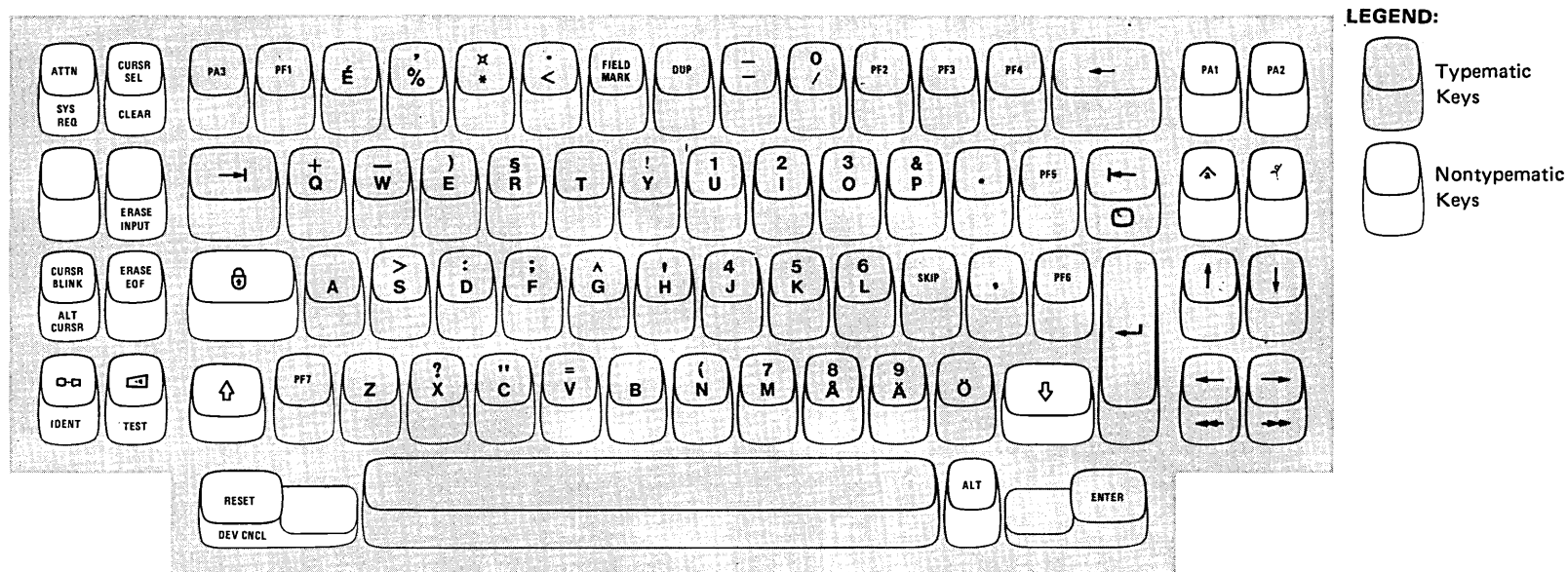


Text Keyboard

Figure 3-10 (Part 3 of 3). English (U.S.) Keyboards for 3276, 3278, and 3279 Display Stations

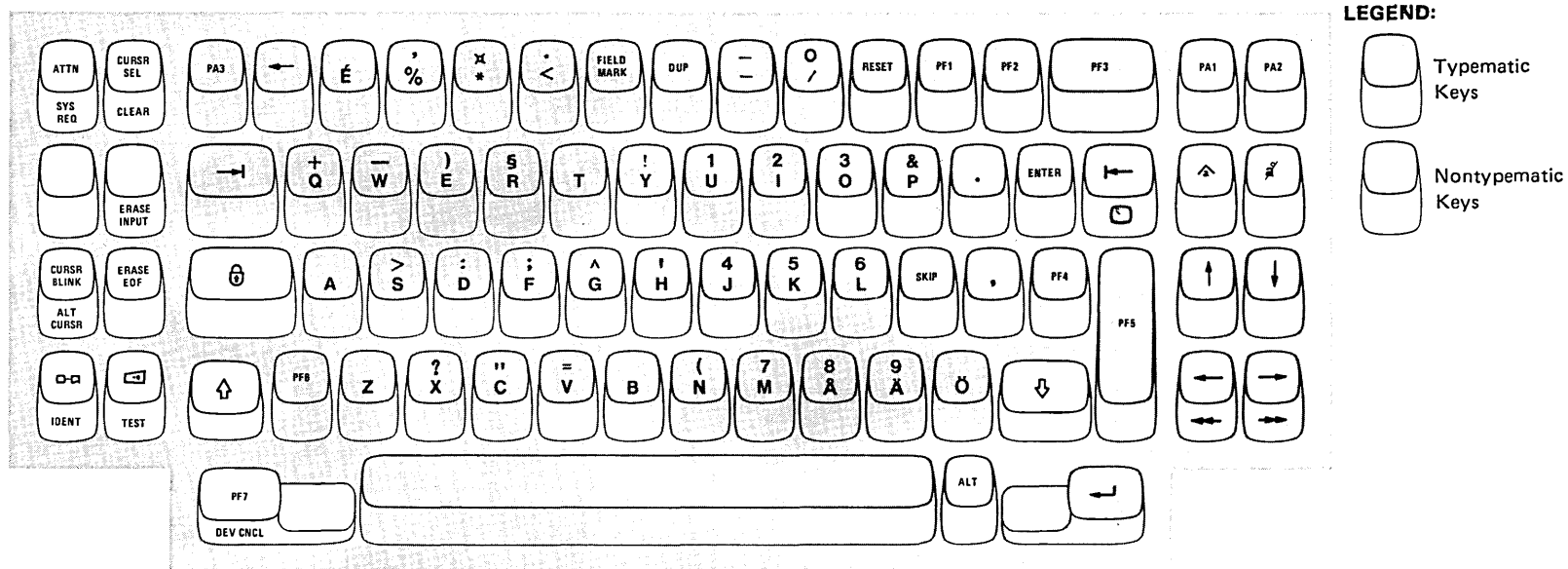


Typewriter Keyboard

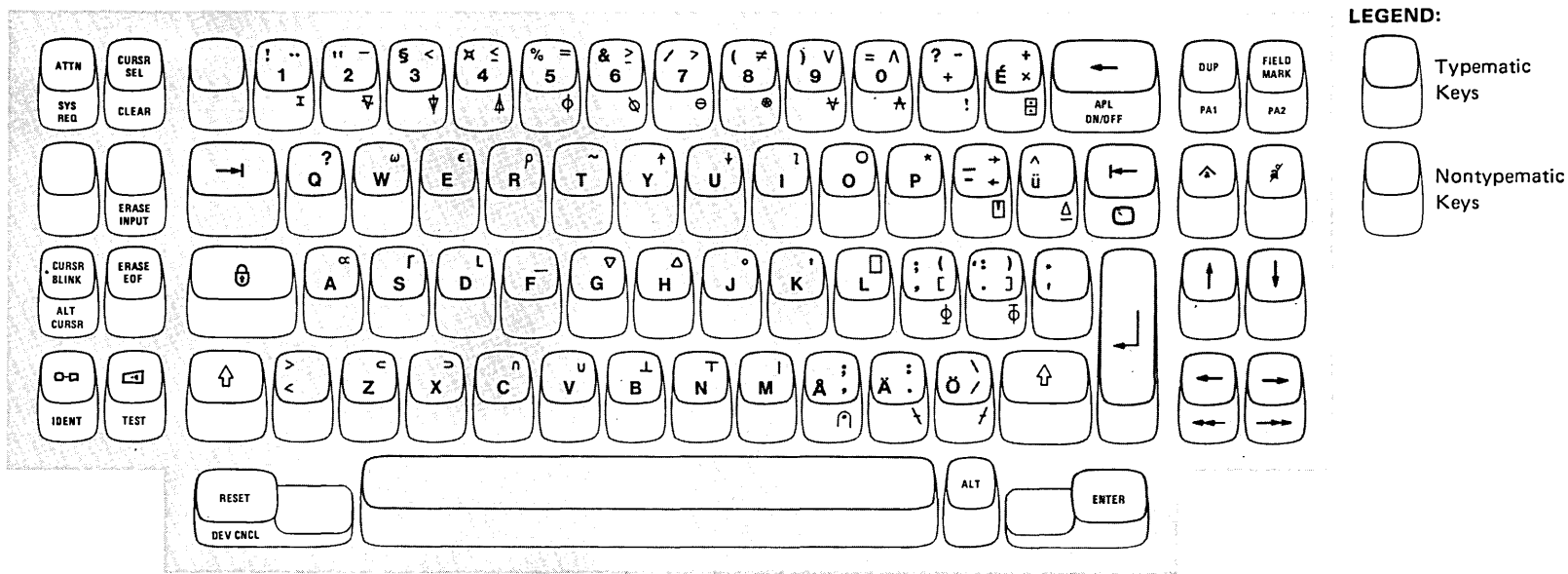


Data Entry Keyboard

Figure 3-11 (Part 1 of 2). Finnish Keyboards for 3276, 3278, and 3279 Display Stations

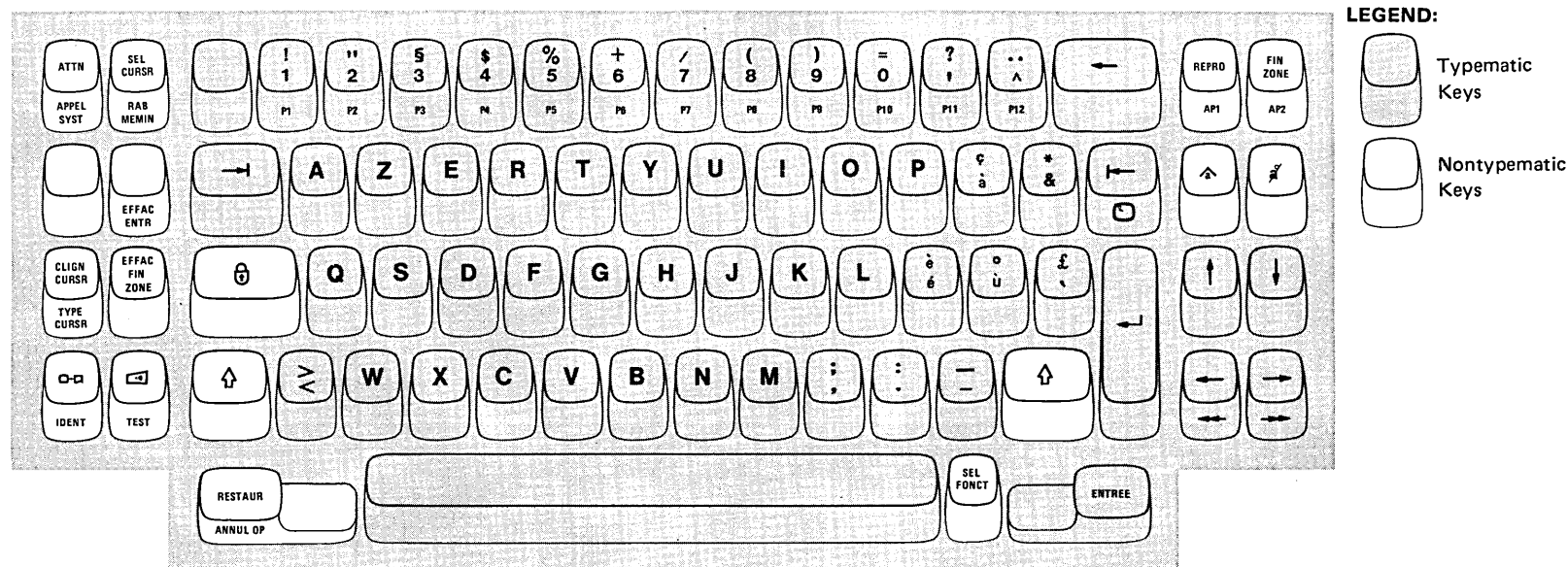


Data Entry Key Punch Keyboard

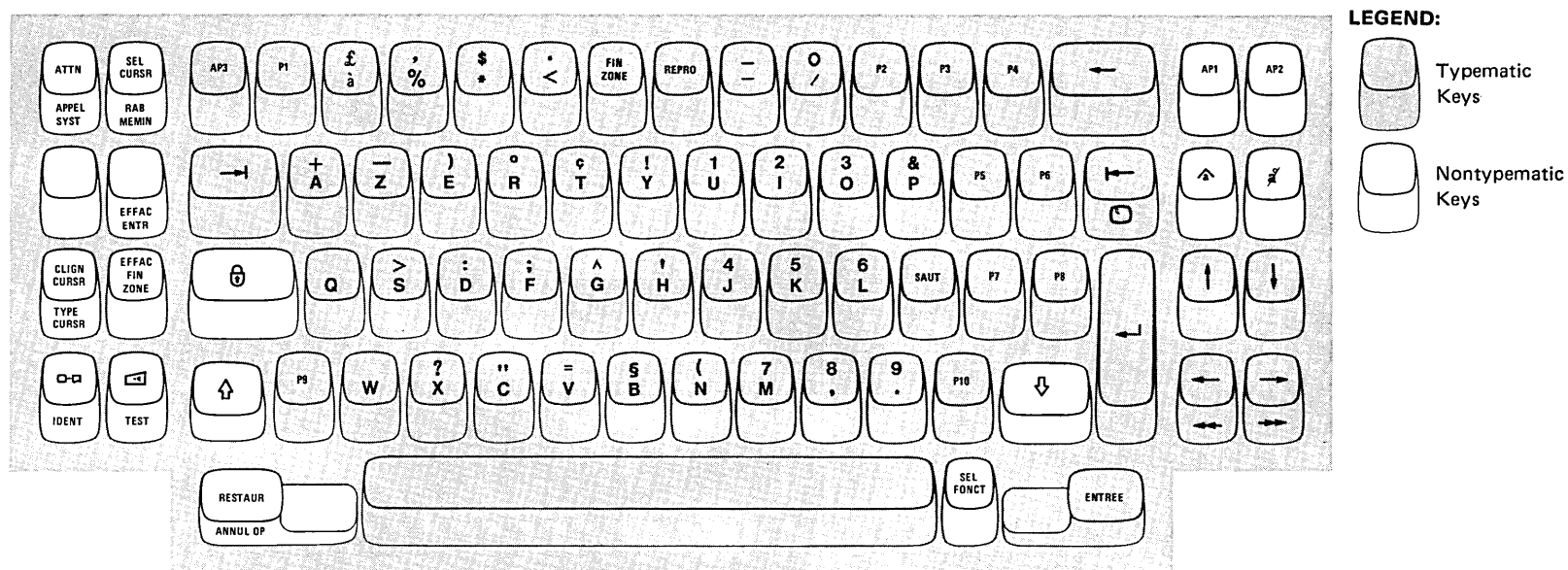


APL Keyboard

Figure 3-11 (Part 2 of 2). Finnish Keyboards for 3276, 3278, and 3279 Display Stations

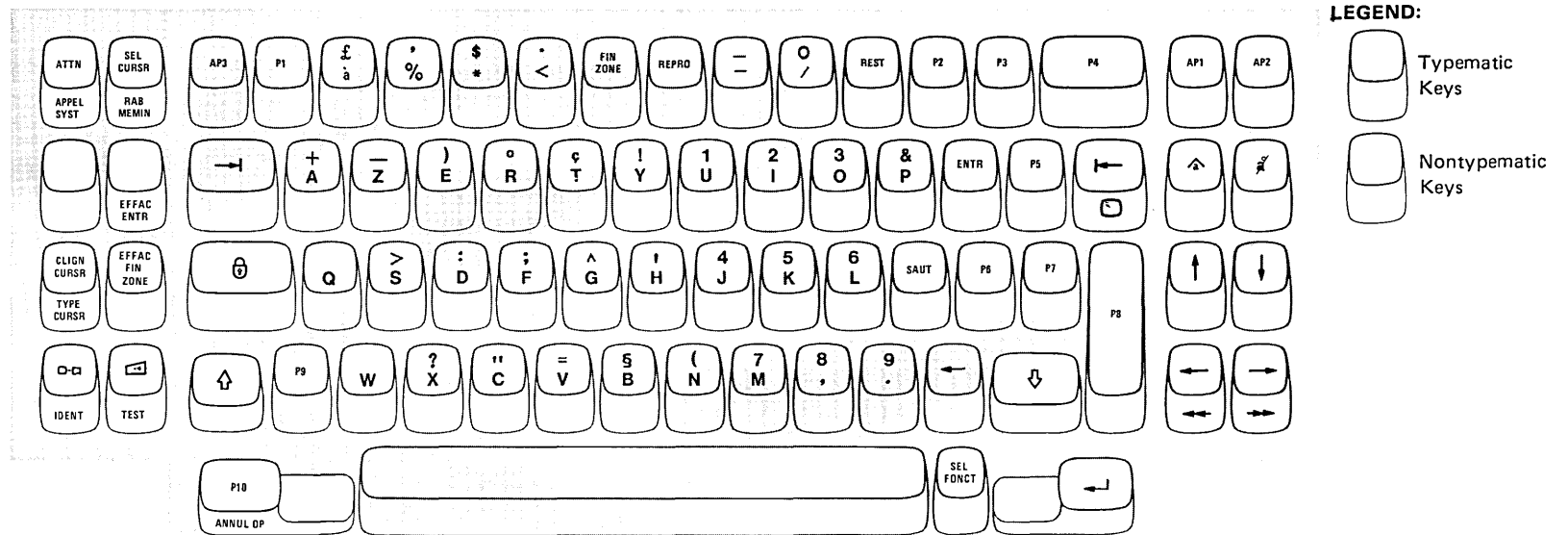


Typewriter Keyboard

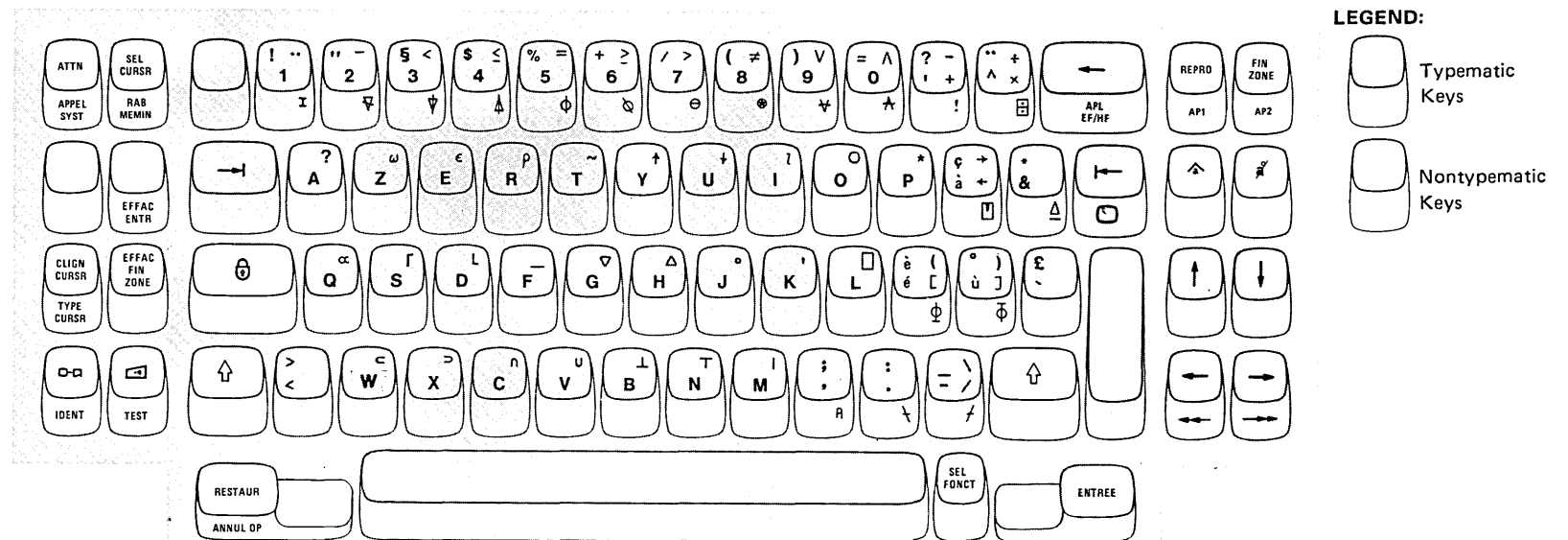


Data Entry Keyboard

Figure 3-12 (Part 1 of 2). French (AZERTY) Keyboards for 3276, 3278, and 3279 Display Stations

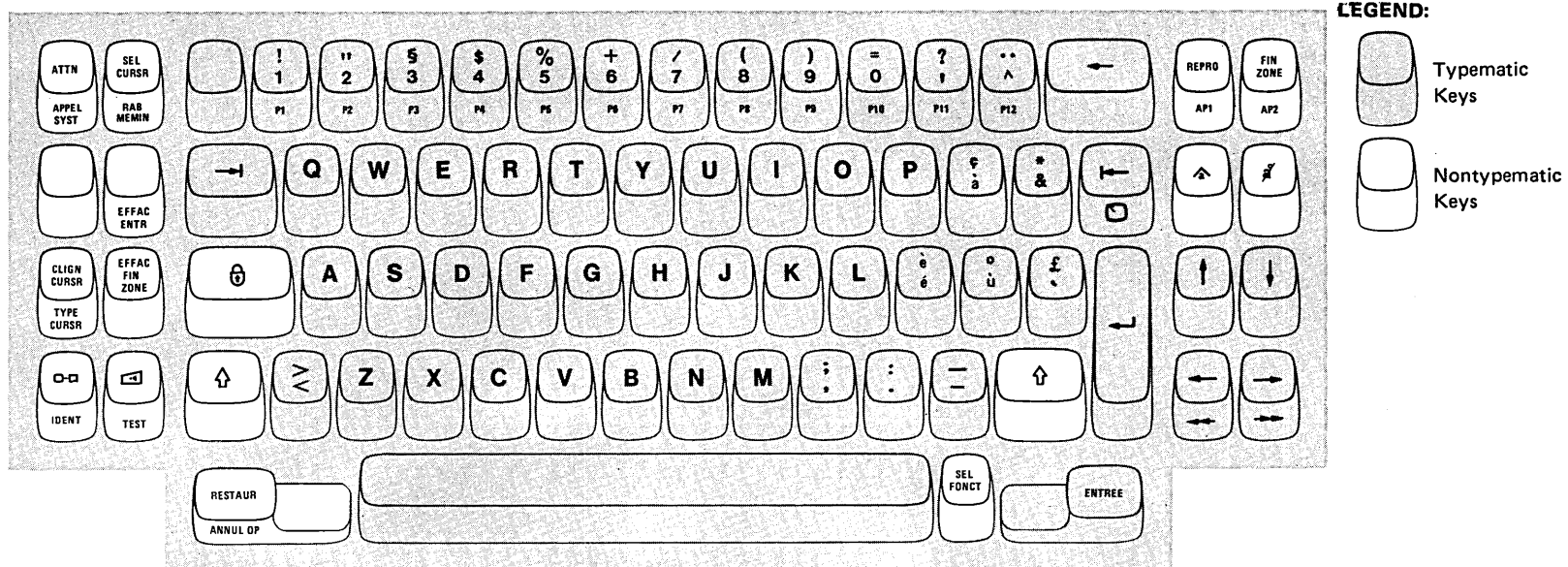


Data Entry Keypunch Keyboard

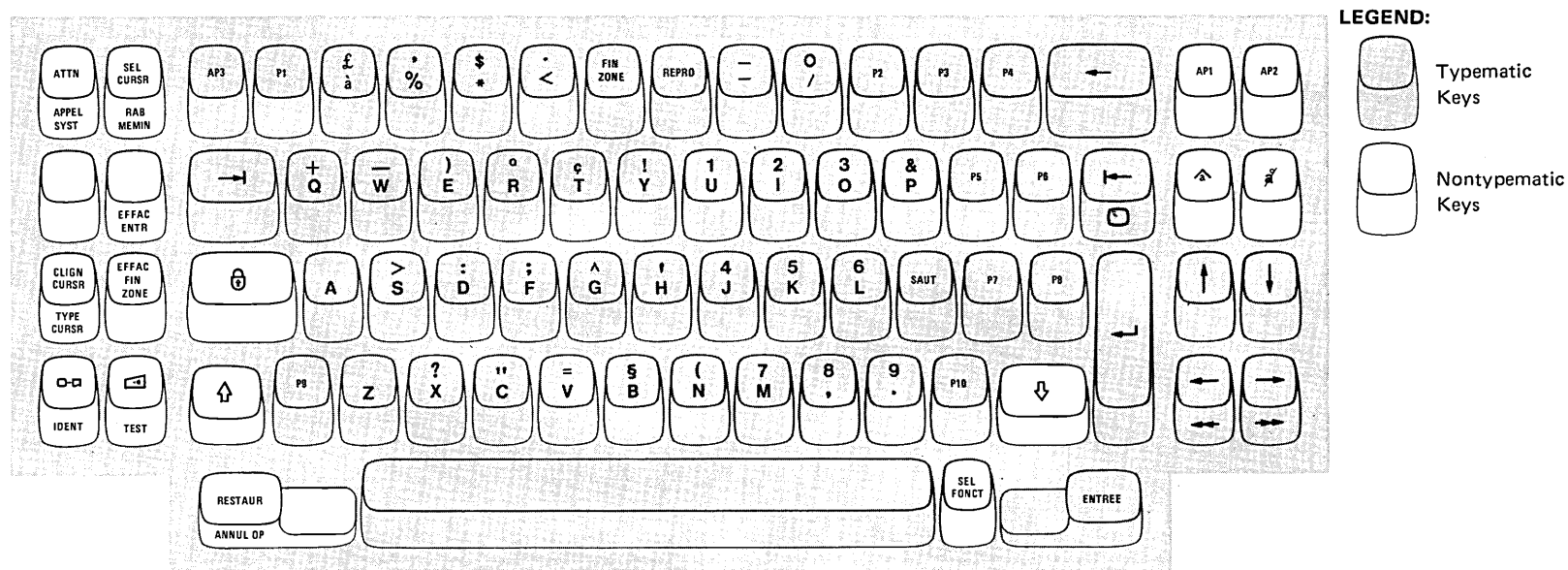


APL Keyboard

Figure 3-12 (Part 2 of 2). French (AZERTY) Keyboards for 3276, 3278, and 3279 Display Stations

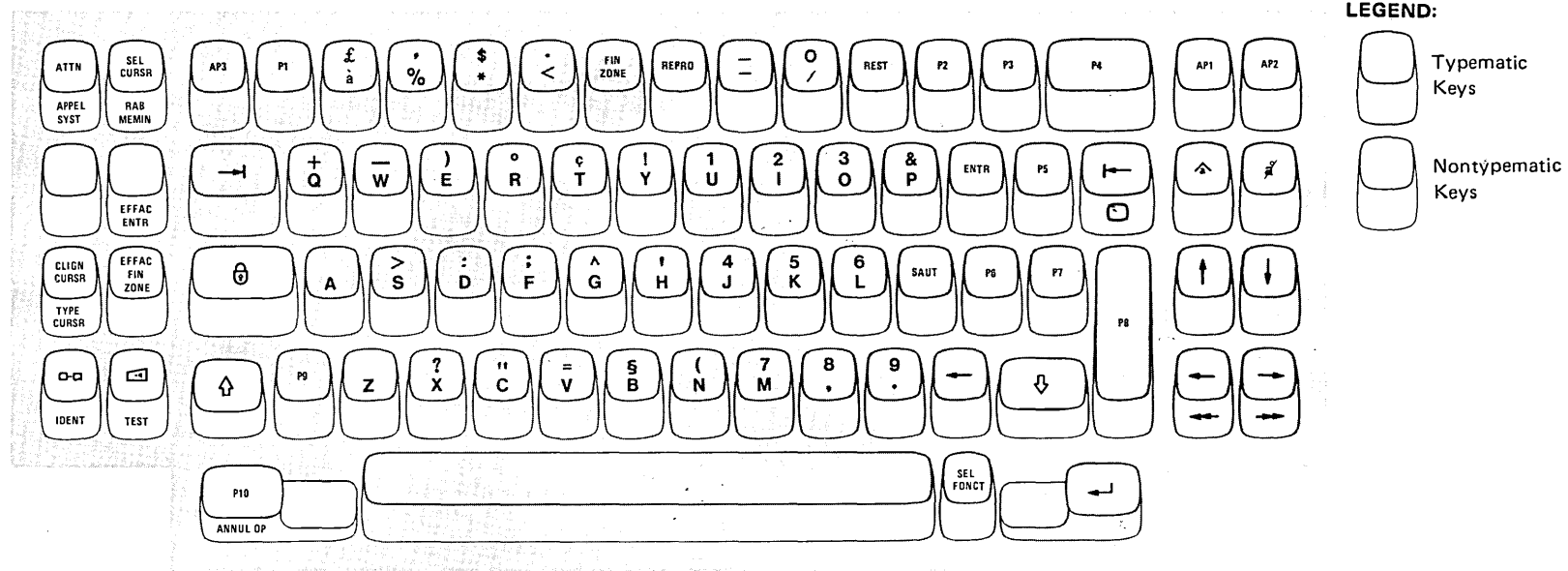


Typewriter Keyboard

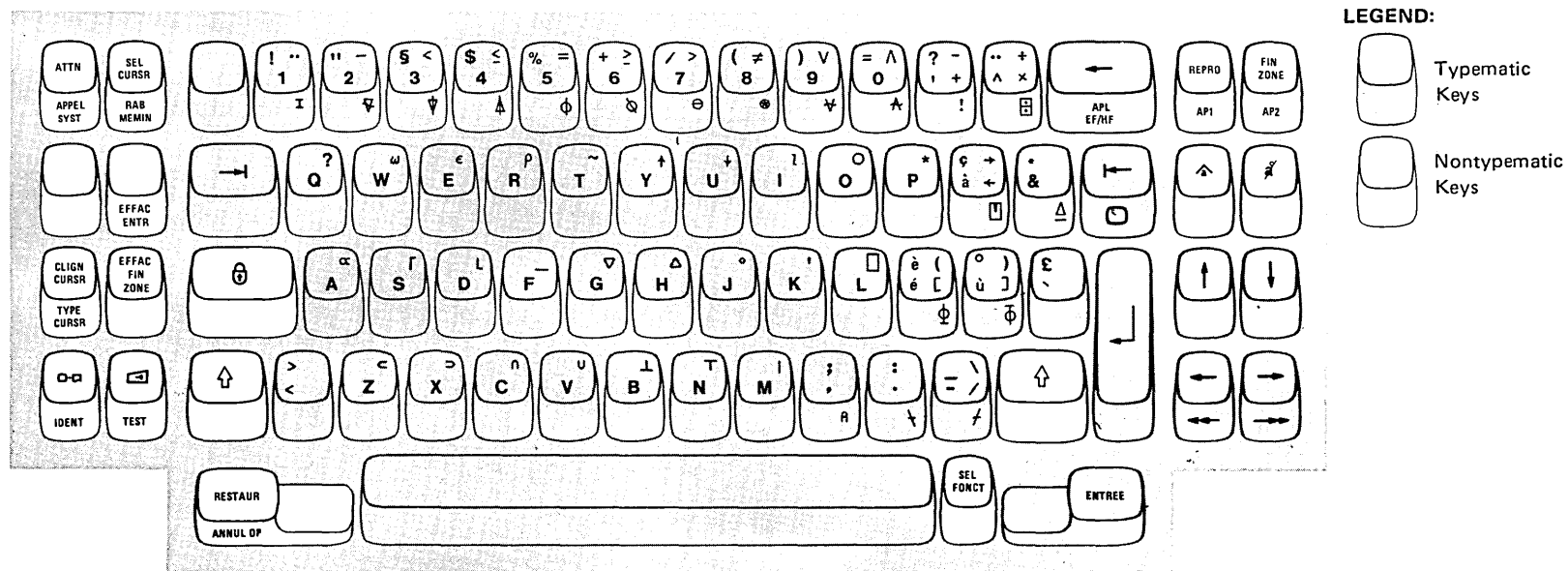


Data Entry Keyboard

Figure 3-13 (Part 1 of 2). French (QWERTY) Keyboards for 3276, 3278, and 3279 Display Stations

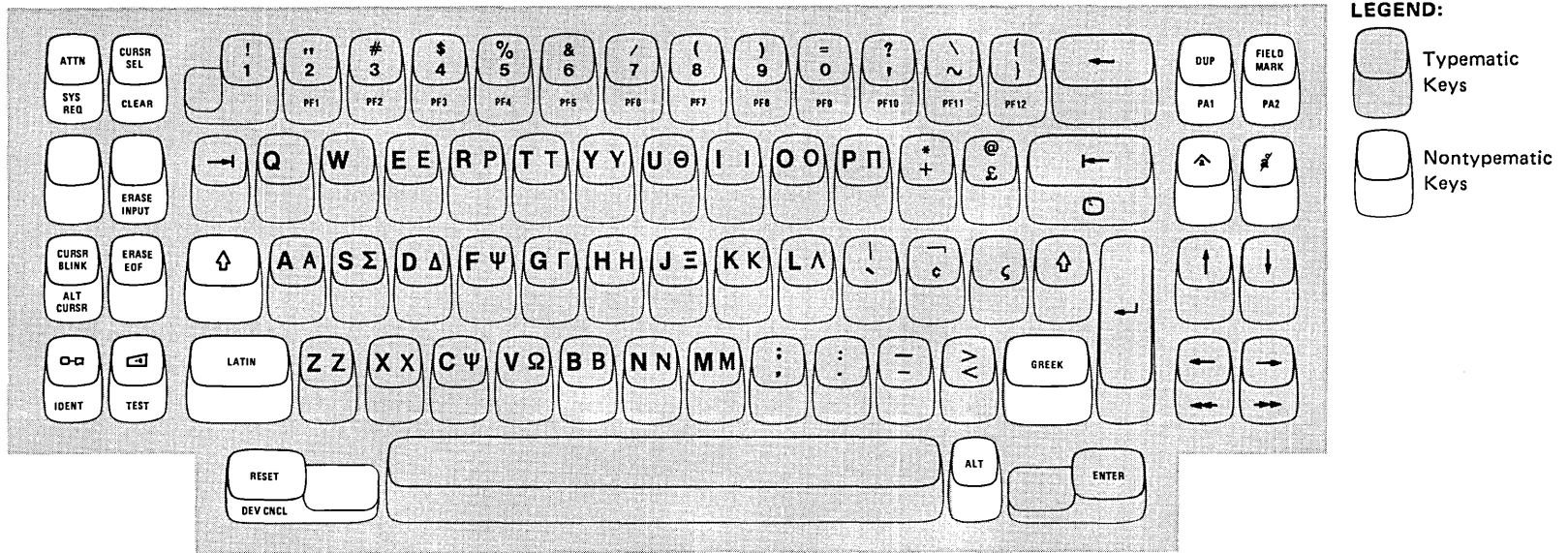


Data Entry Keypunch Keyboard

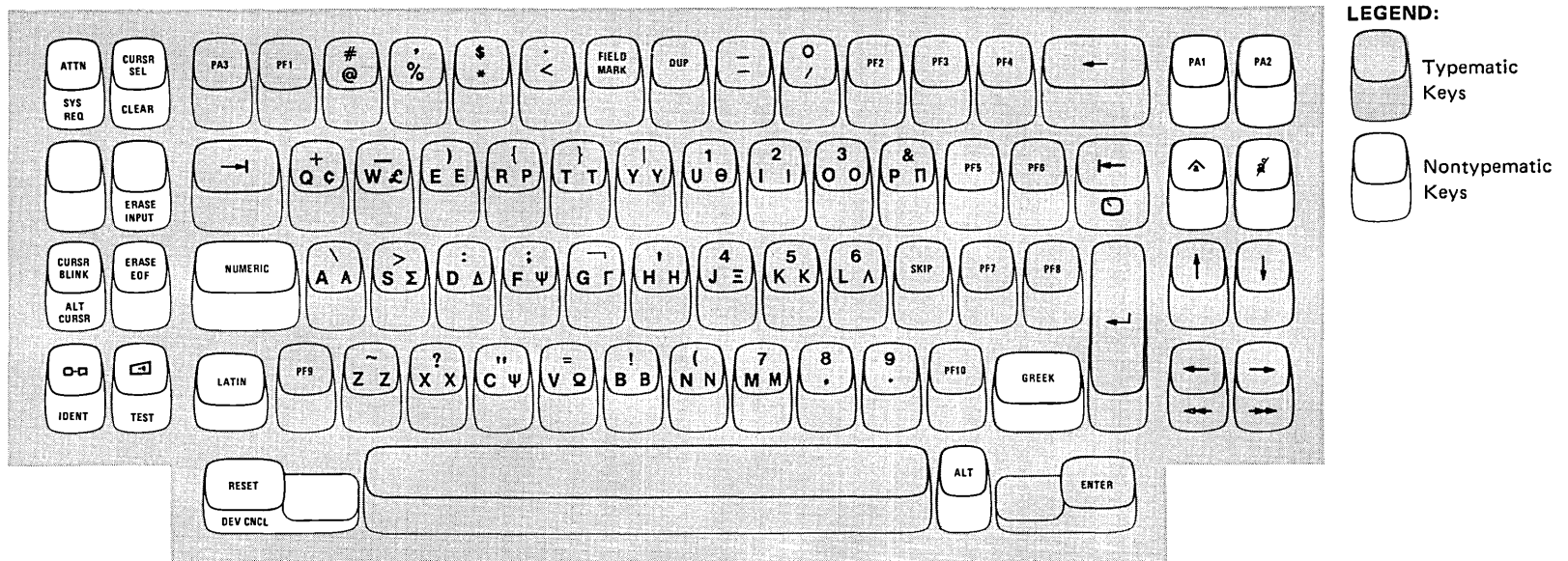


APL Keyboard

Figure 3-13 (Part 2 of 2). French (QWERTY) Keyboards for 3276, 3278, and 3279 Display Stations



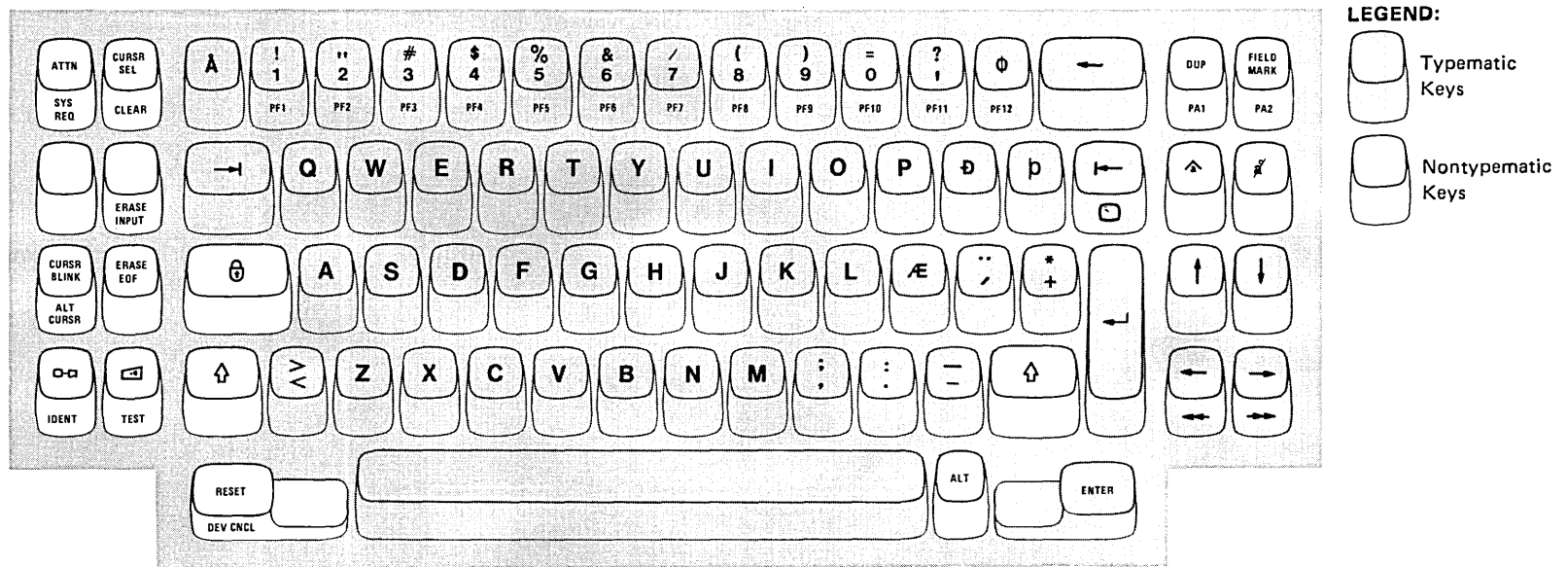
Typewriter Keyboard



Data Entry Keyboard

Note: Greek keyboards are 3278 and 3279 Display Station RPQ items.

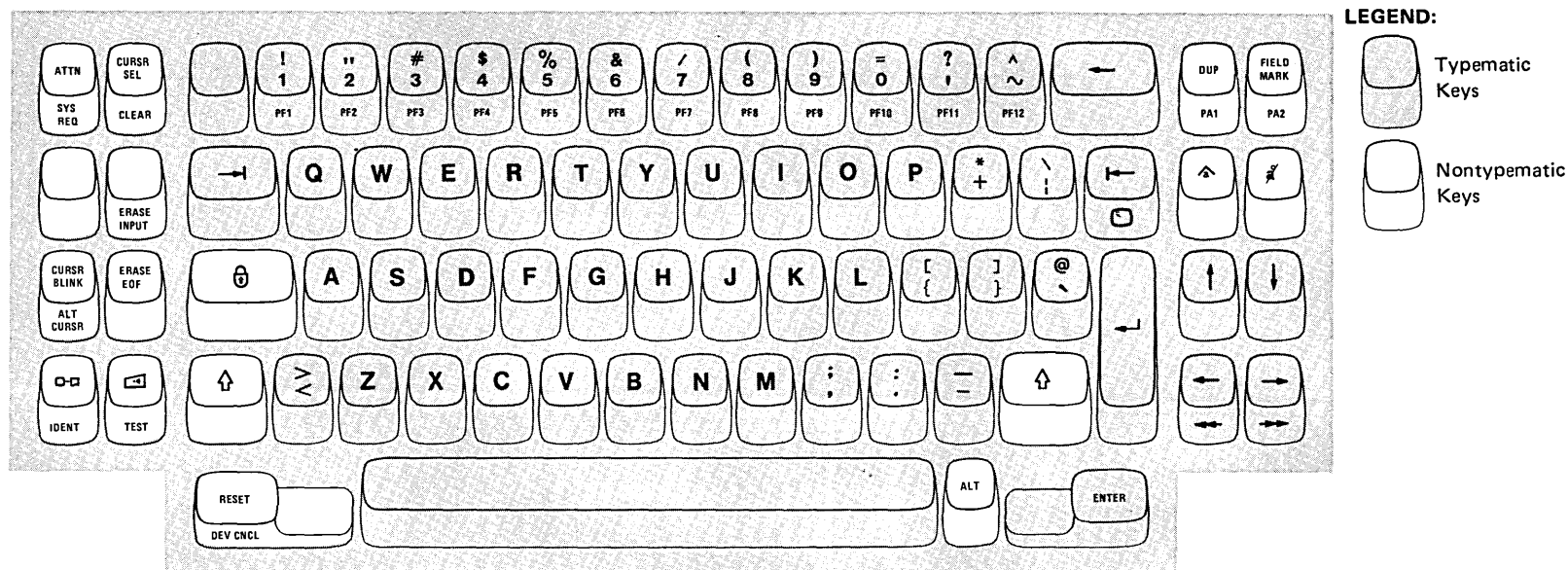
Figure 3-14. Greek Keyboards for 3278 and 3279 Display Stations (Not Supported by 3274 and 3276)



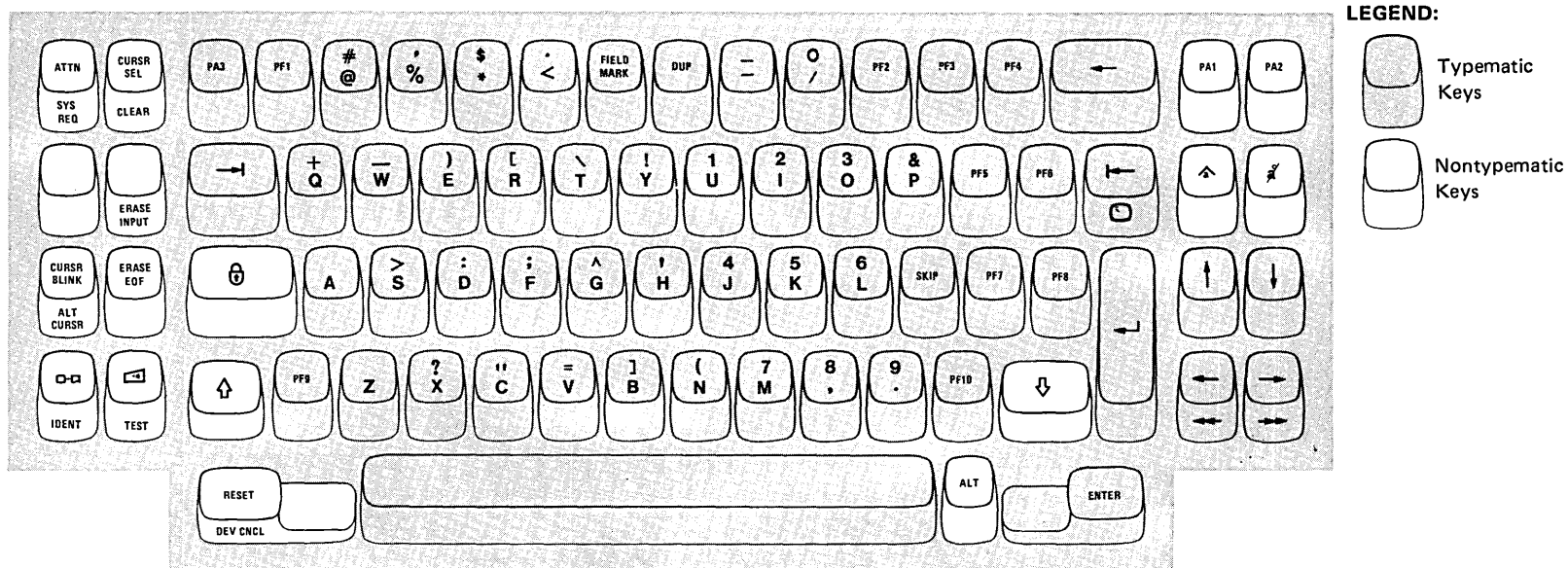
Typewriter Keyboard

Note: The Icelandic keyboard is a 3278 and 3279 Display Station RPQ item.

Figure 3-15. Icelandic Keyboard for 3278 and 3279 Display Stations (Not Supported by 3274 and 3276)

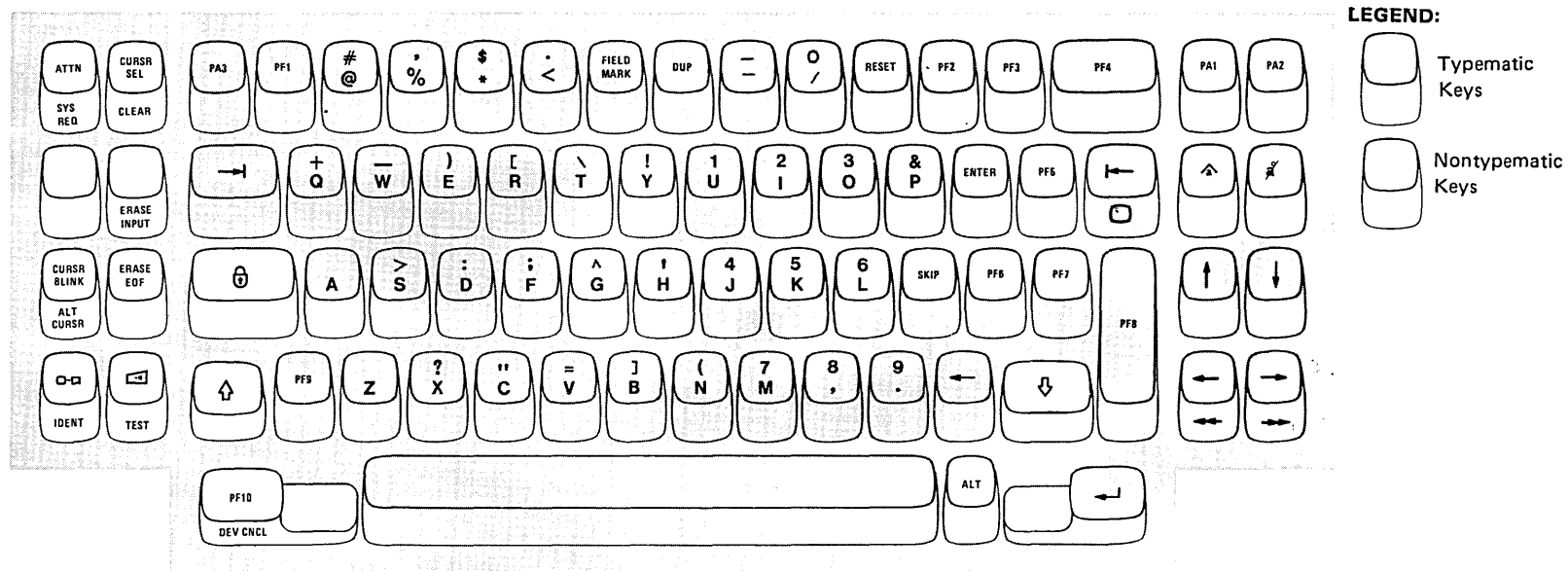


Typewriter Keyboard

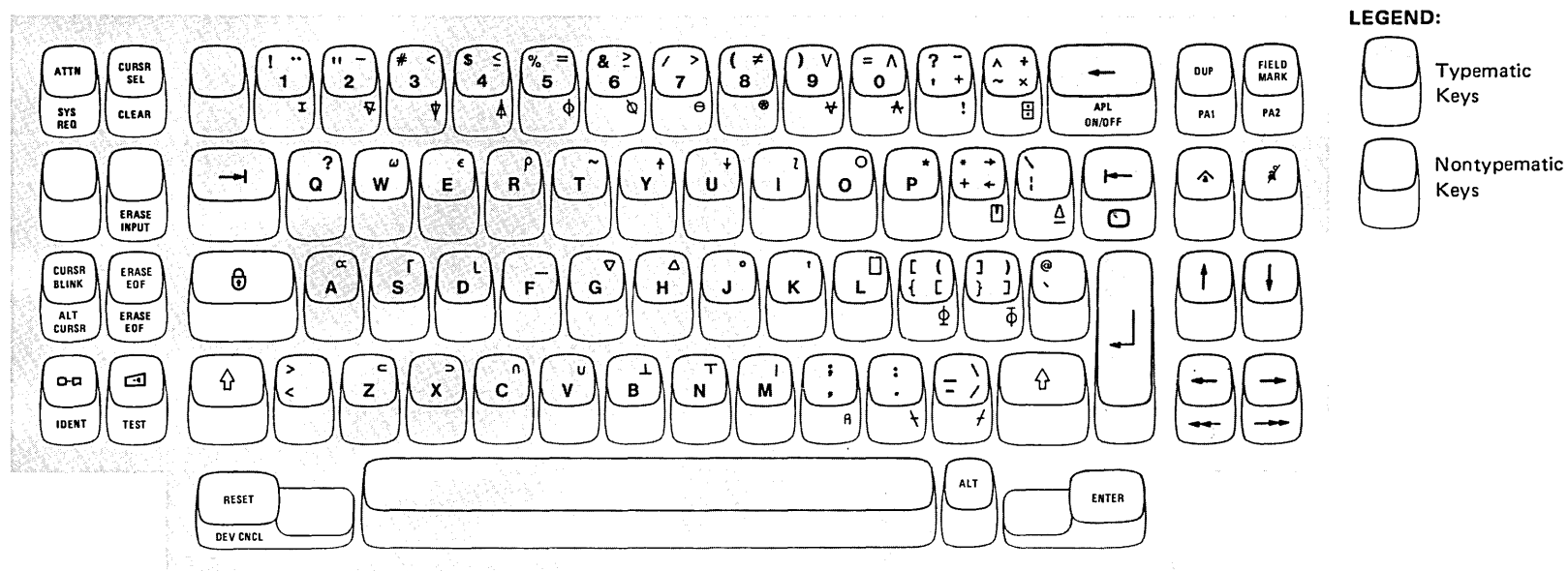


Data Entry Keyboard

Figure 3-16 (Part 1 of 2). International Keyboards for 3276, 3278, and 3279 Display Stations

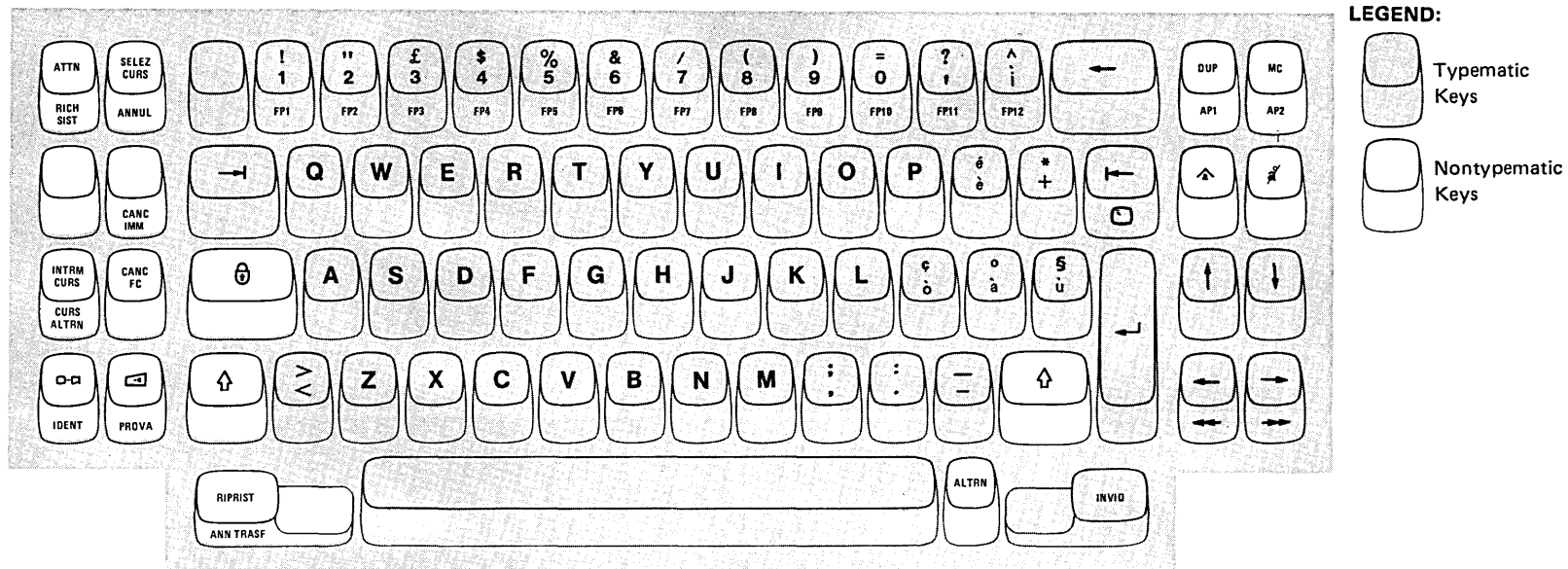


Data Entry Keypunch Keyboard

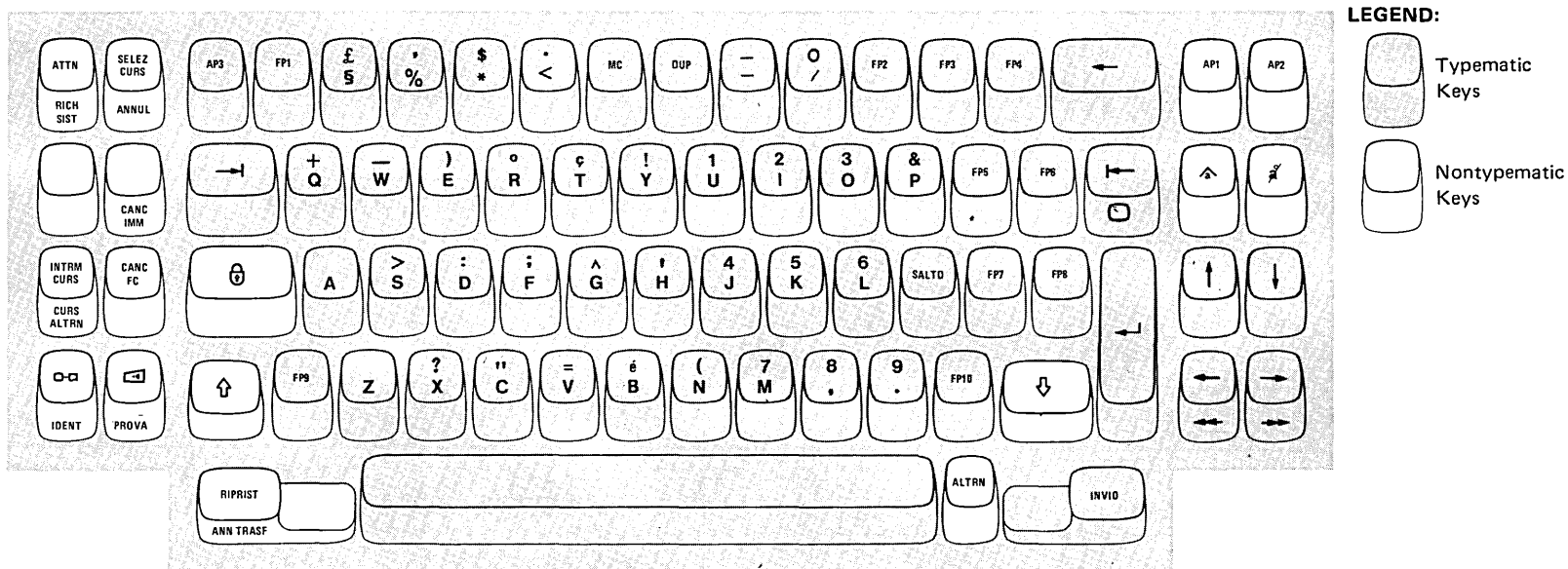


APL Keyboard

Figure 3-16 (Part 2 of 2). International Keyboards for 3276, 3278, and 3279 Display Stations

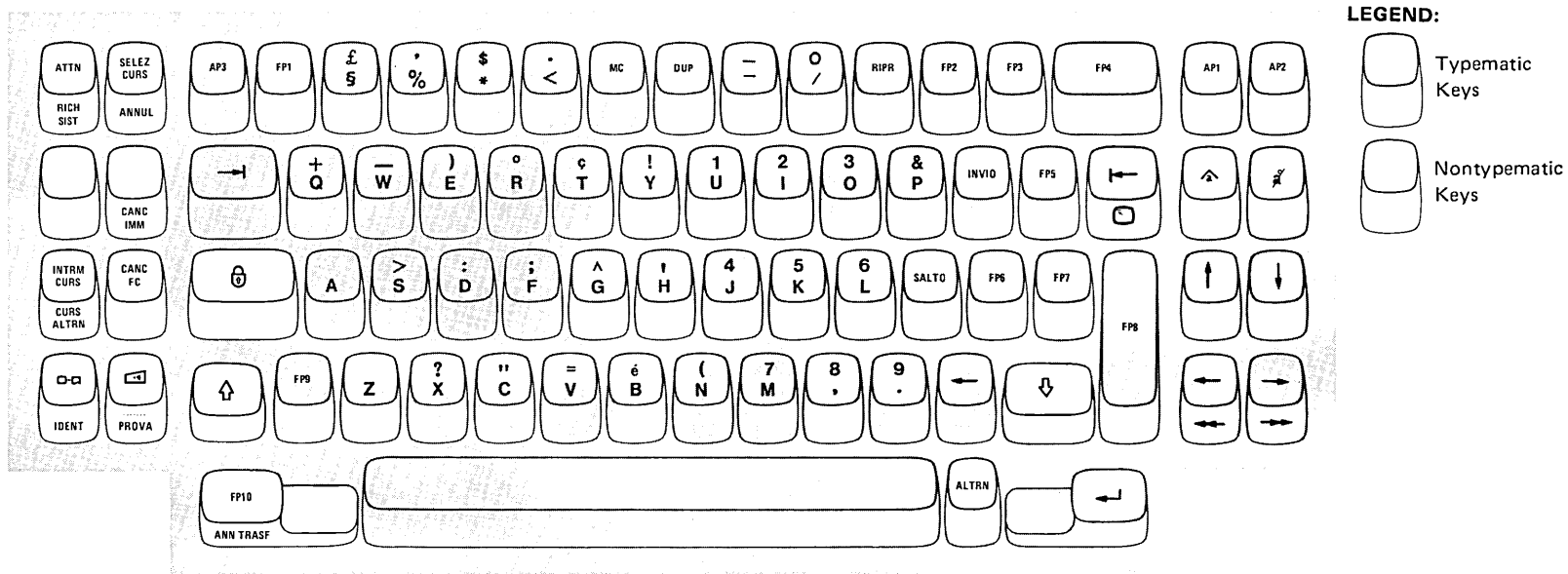


Typewriter Keyboard

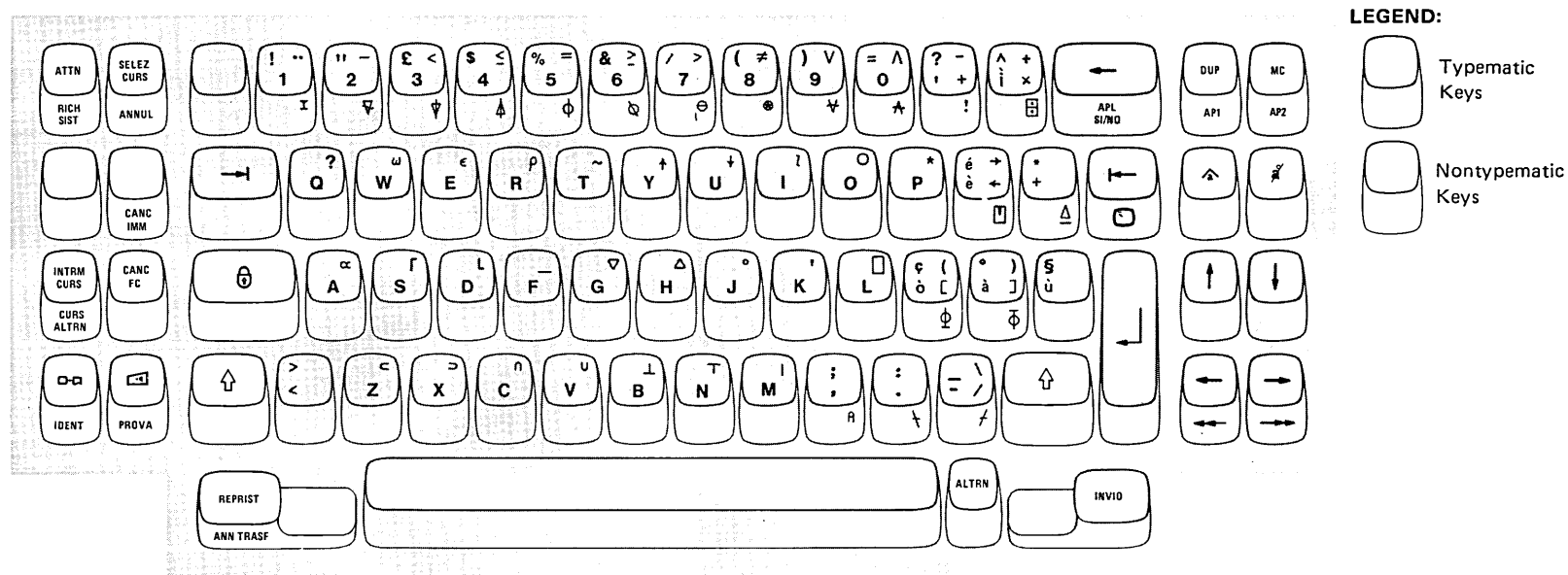


Data Entry Keyboard

Figure 3-17 (Part 1 of 2). Italian Keyboards for 3276, 3278, and 3279 Display Stations

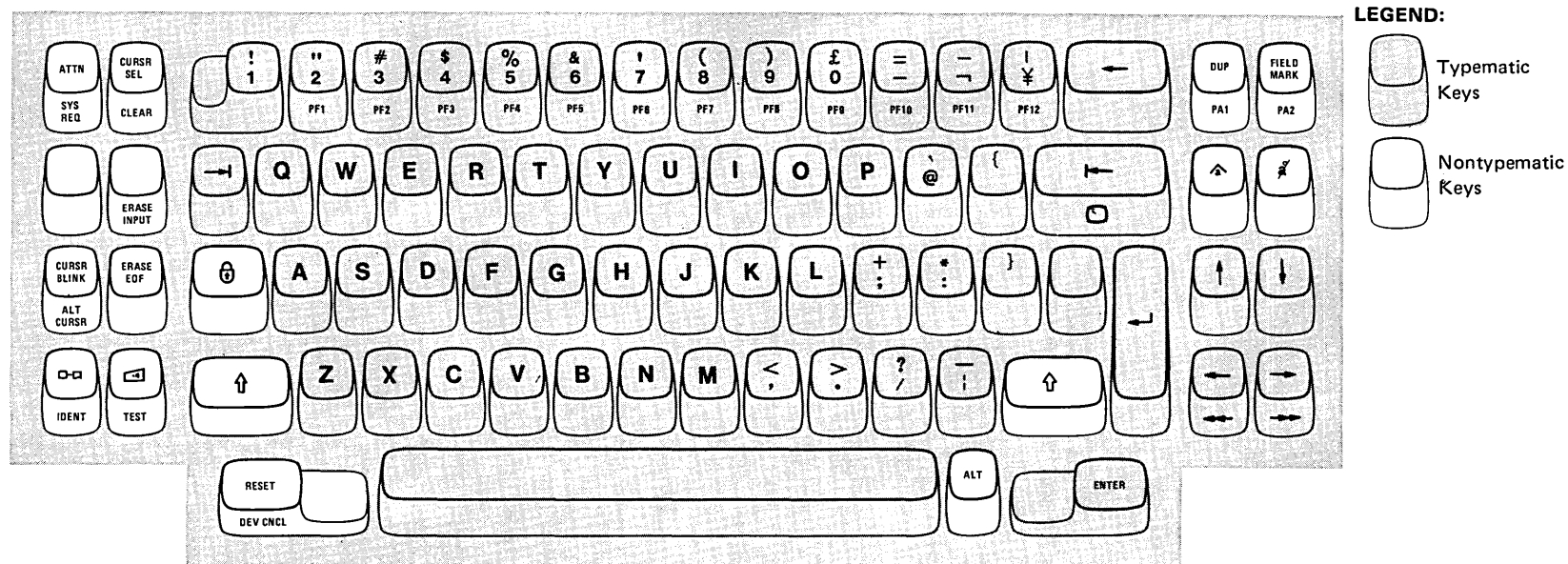


Data Entry Keypunch Keyboard

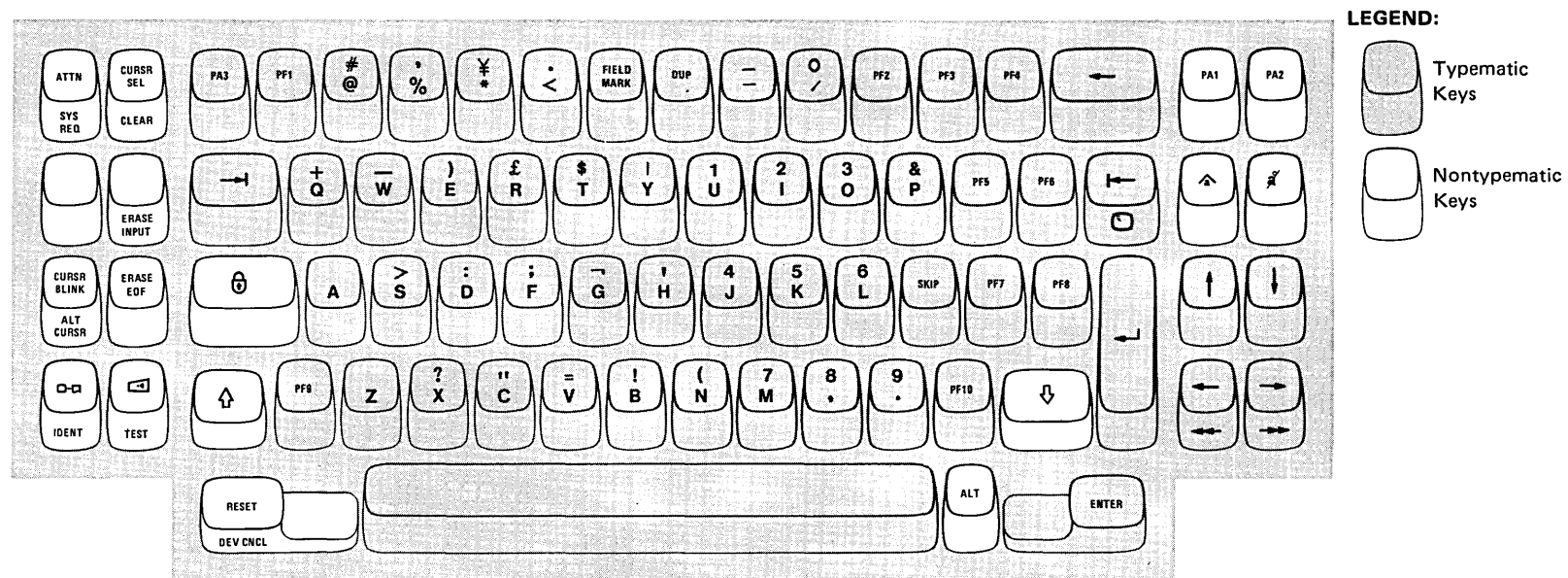


APL Keyboard

Figure 3-17 (Part 2 of 2). Italian Keyboards for 3276, 3278, and 3279 Display Stations

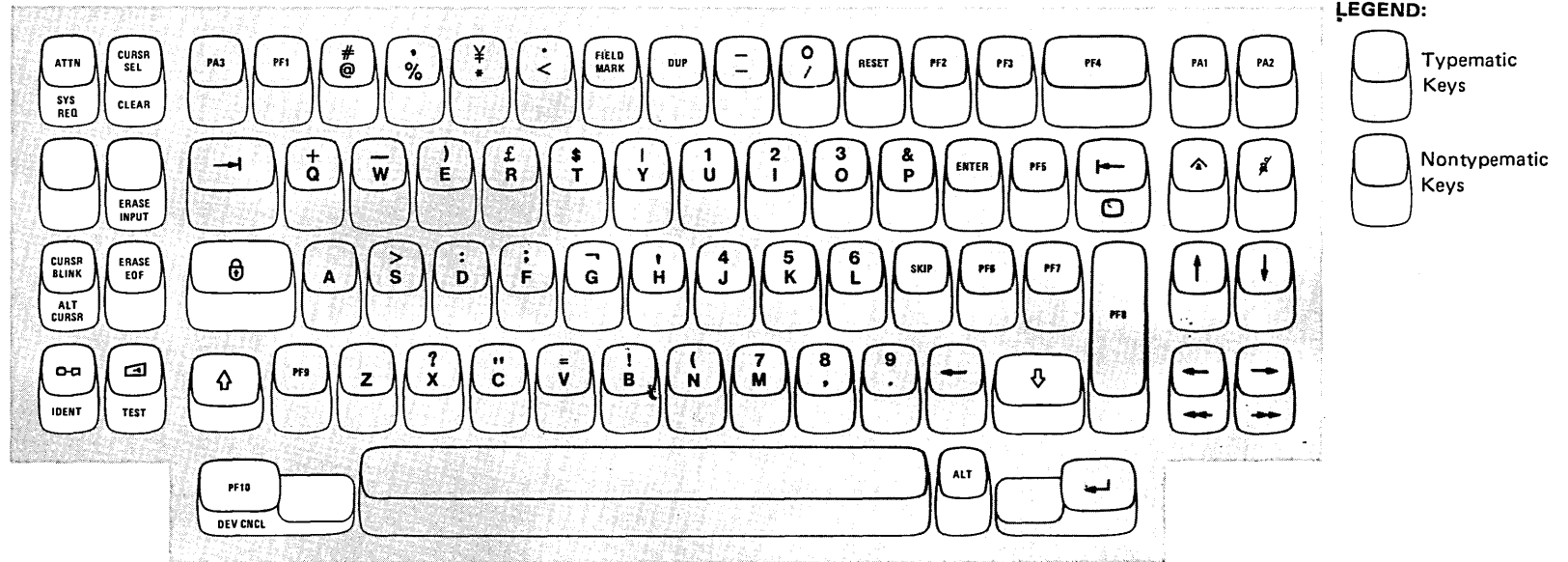


Typewriter Keyboard

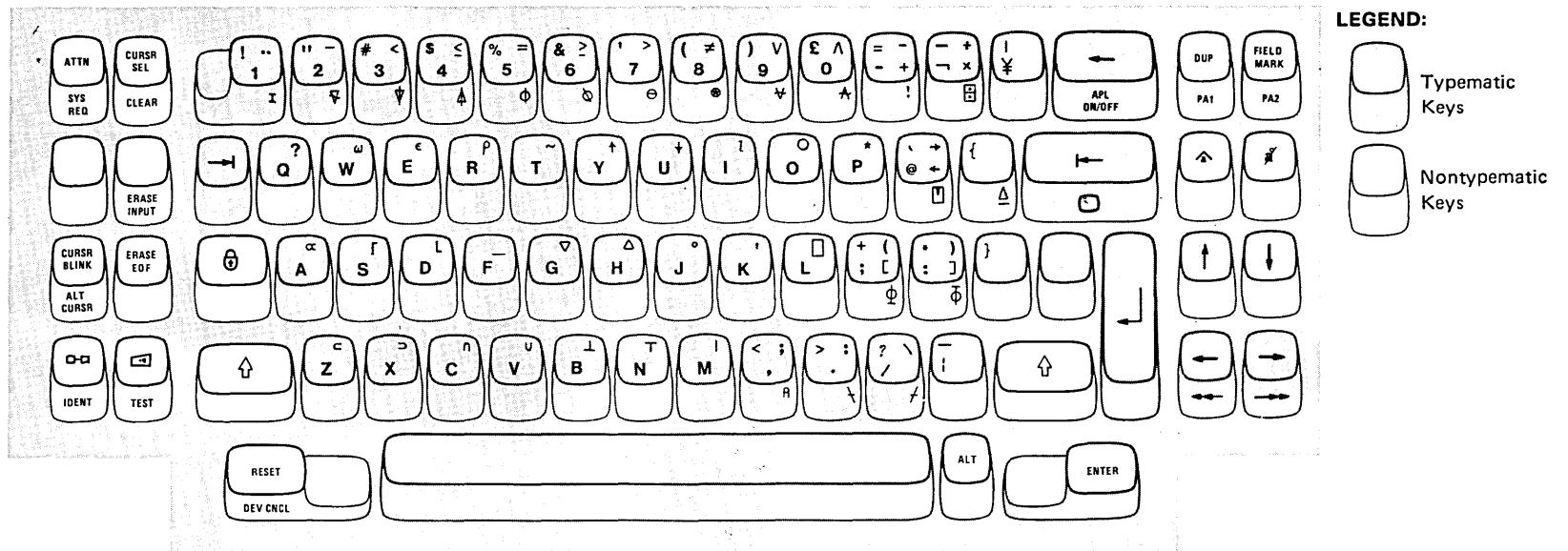


Data Entry Keyboard

Figure 3-18 (Part 1 of 2). Japanese English Keyboards for 3276, 3278, and 3279 Display Stations



Data Entry Keypunch Keyboard



APL Keyboard

Figure 3-18 (Part 2 of 2). Japanese English Keyboards for 3276, 3278, and 3279 Display Stations

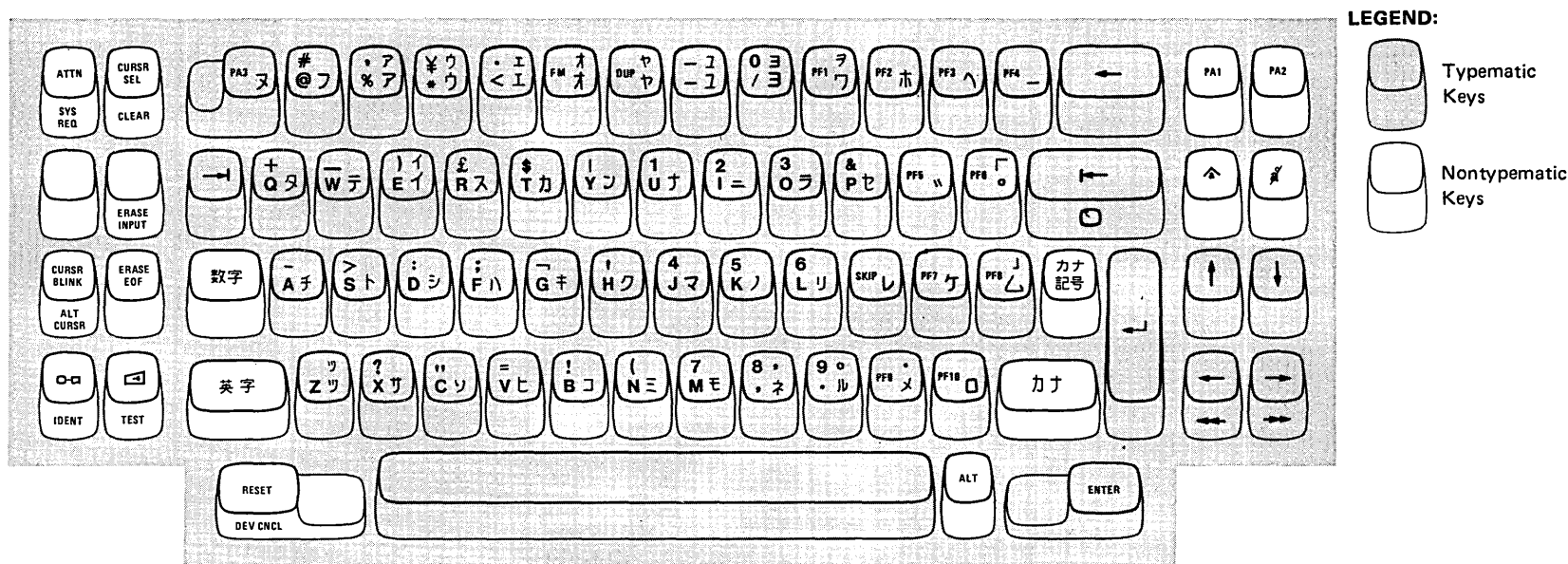
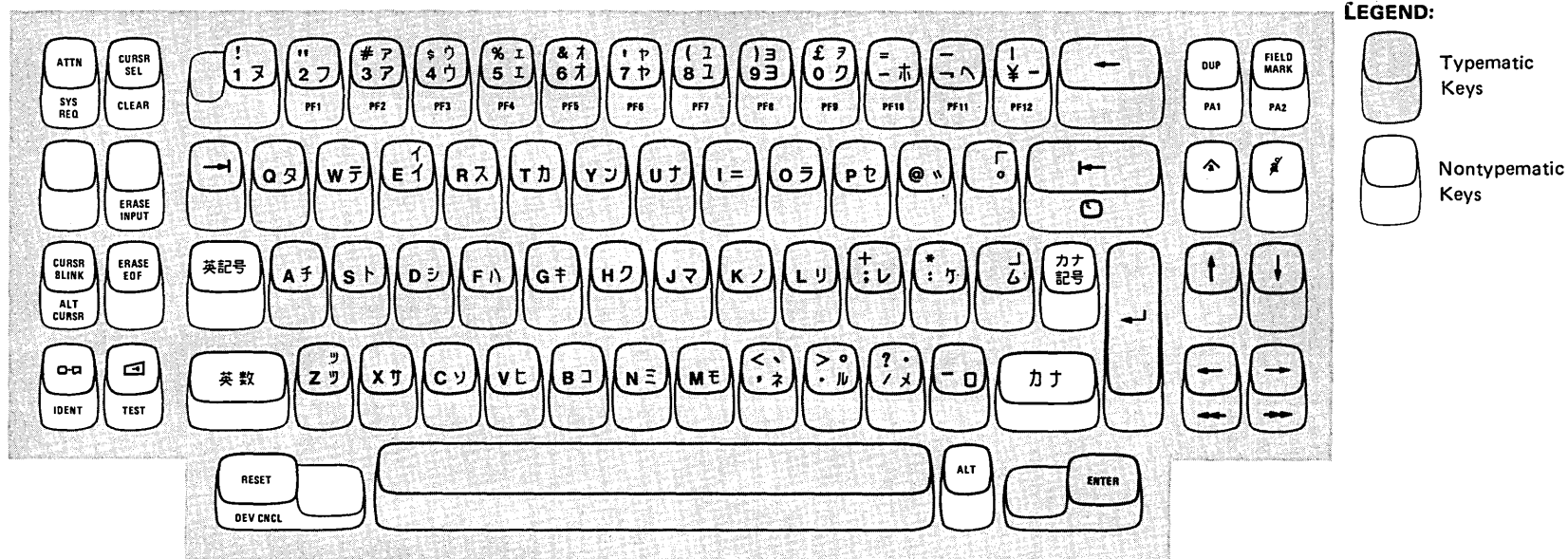
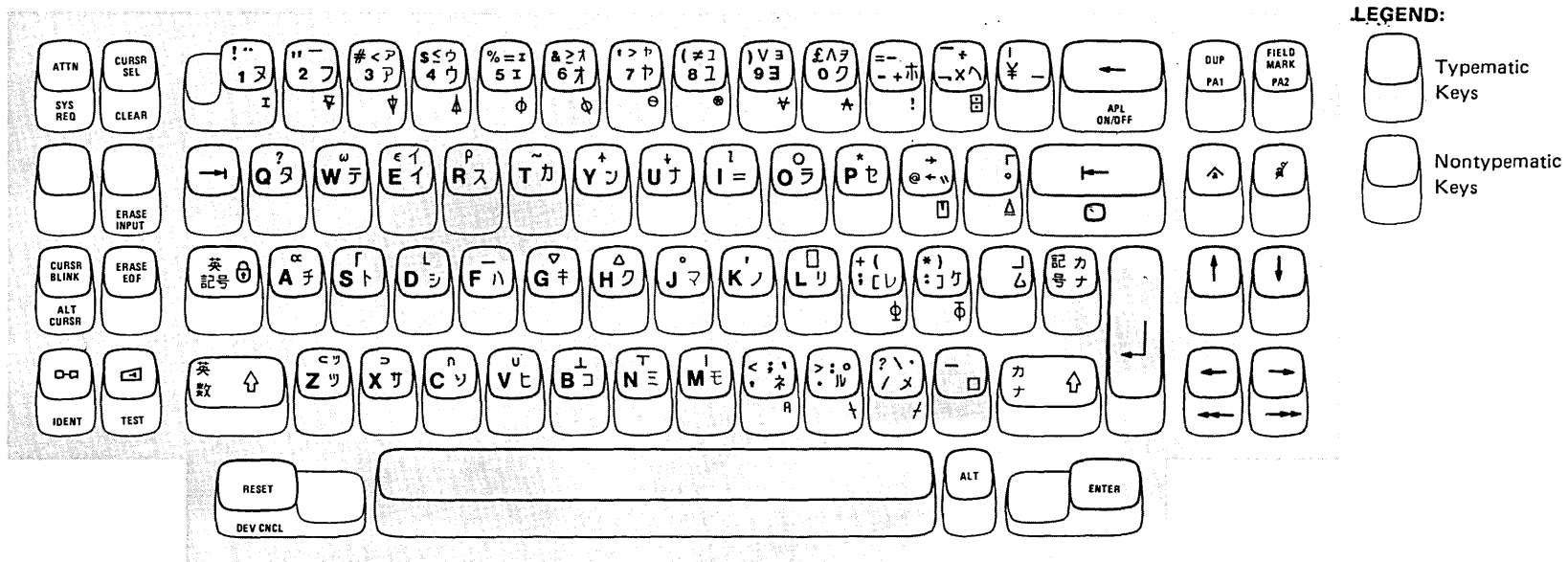
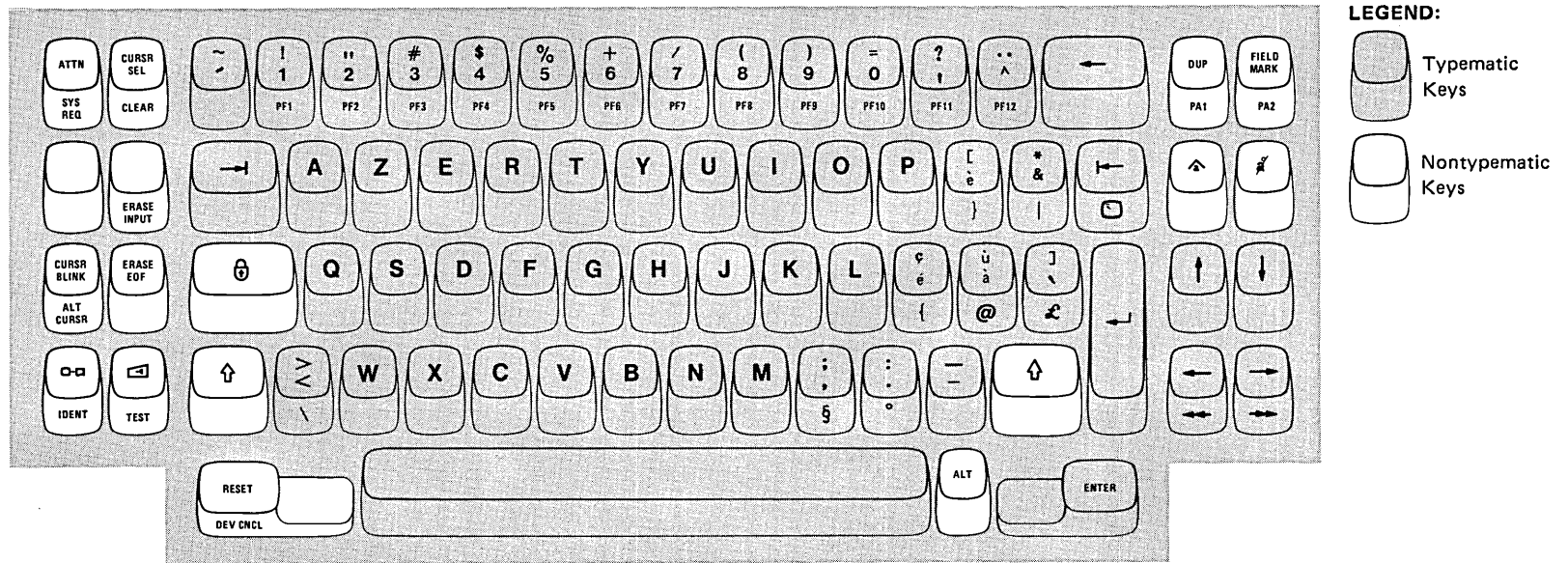


Figure 3-19 (Part 1 of 2). Japanese Katakana Keyboards for 3276, 3278, and 3279 Display Stations

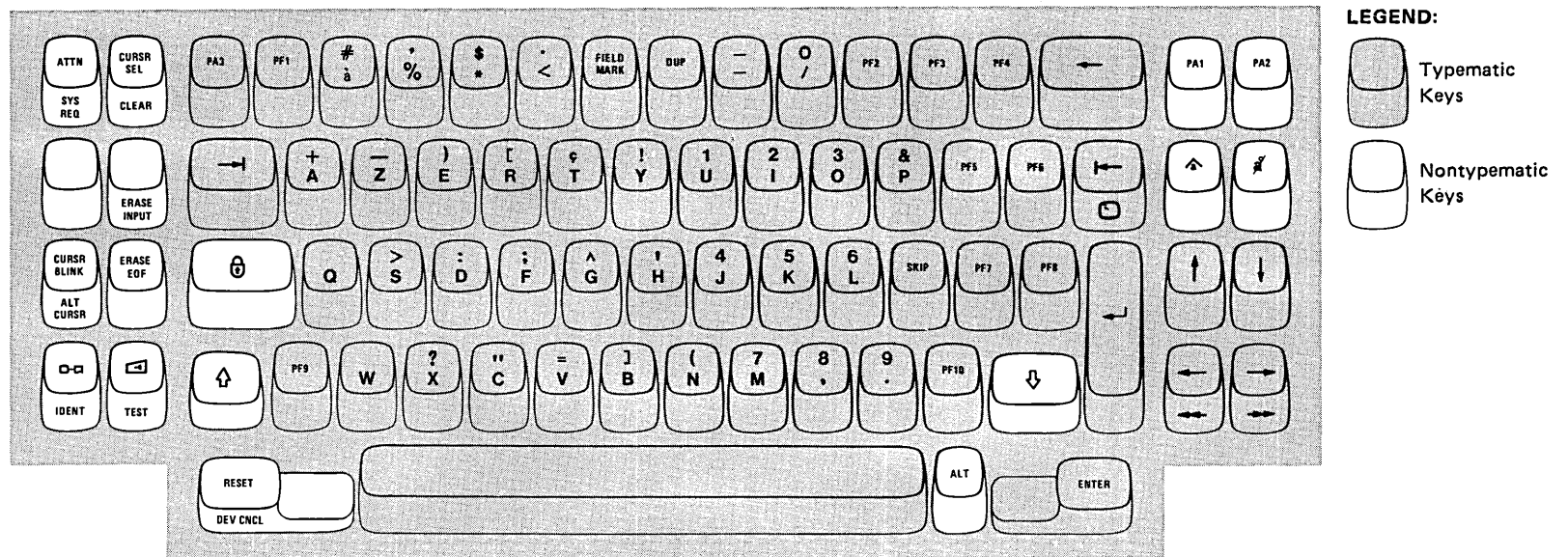


APL Keyboard

Figure 3-19 (Part 2 of 2). Japanese Katakana Keyboards for 3276, 3278, and 3279 Display Stations

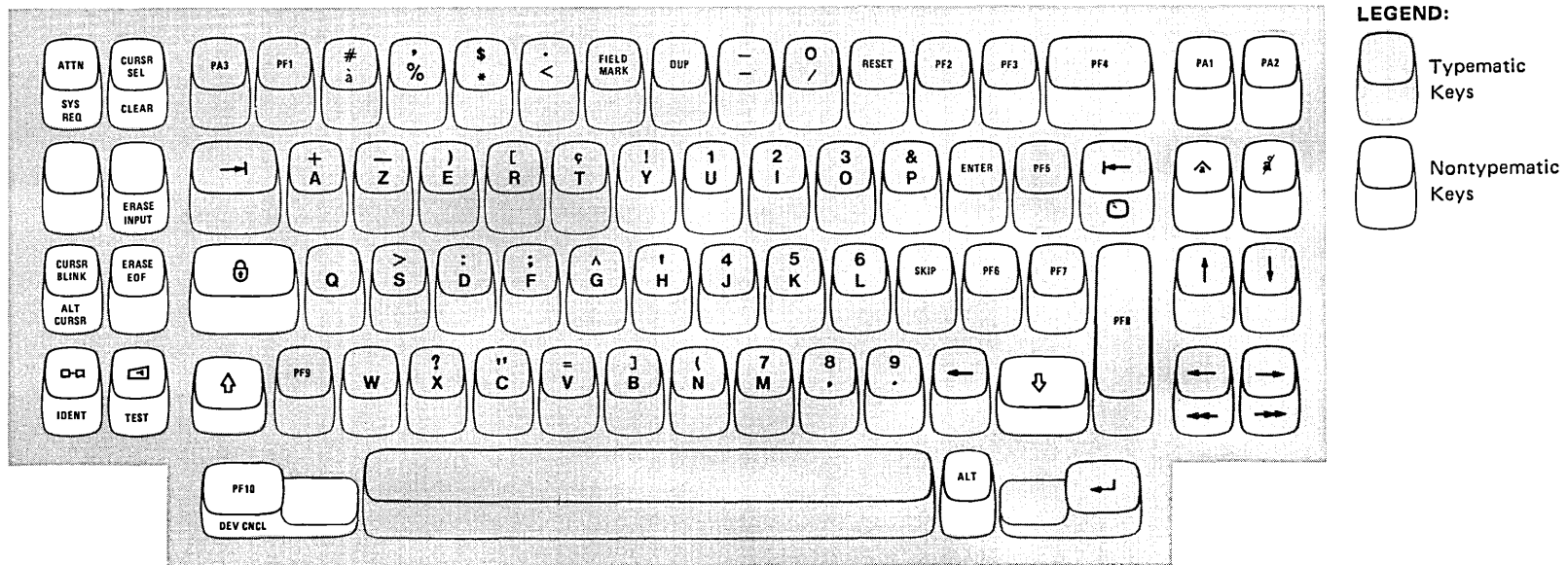


Typewriter Keyboard

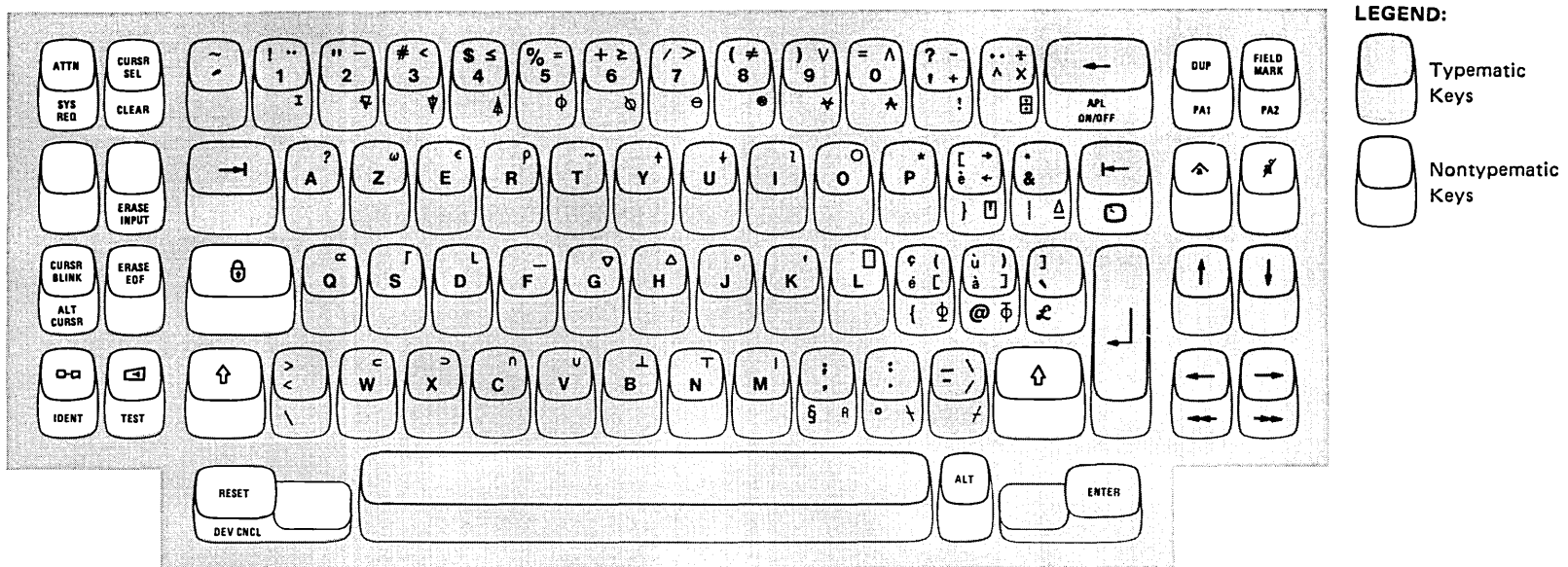


Data Entry Keyboard

Figure 3-20 (Part 1 of 2). New Belgian Keyboards for 3278 and 3279 Display Stations (Not Supported by 3274 and 3276)

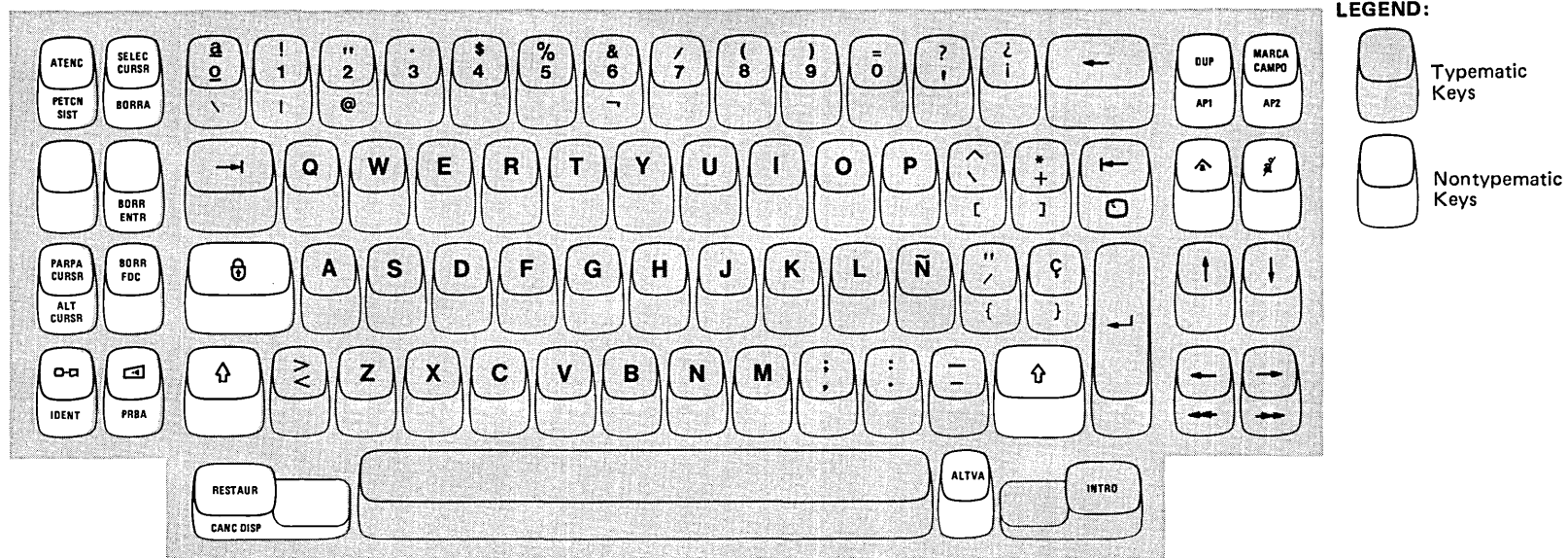


Data Entry Keypunch Keyboard

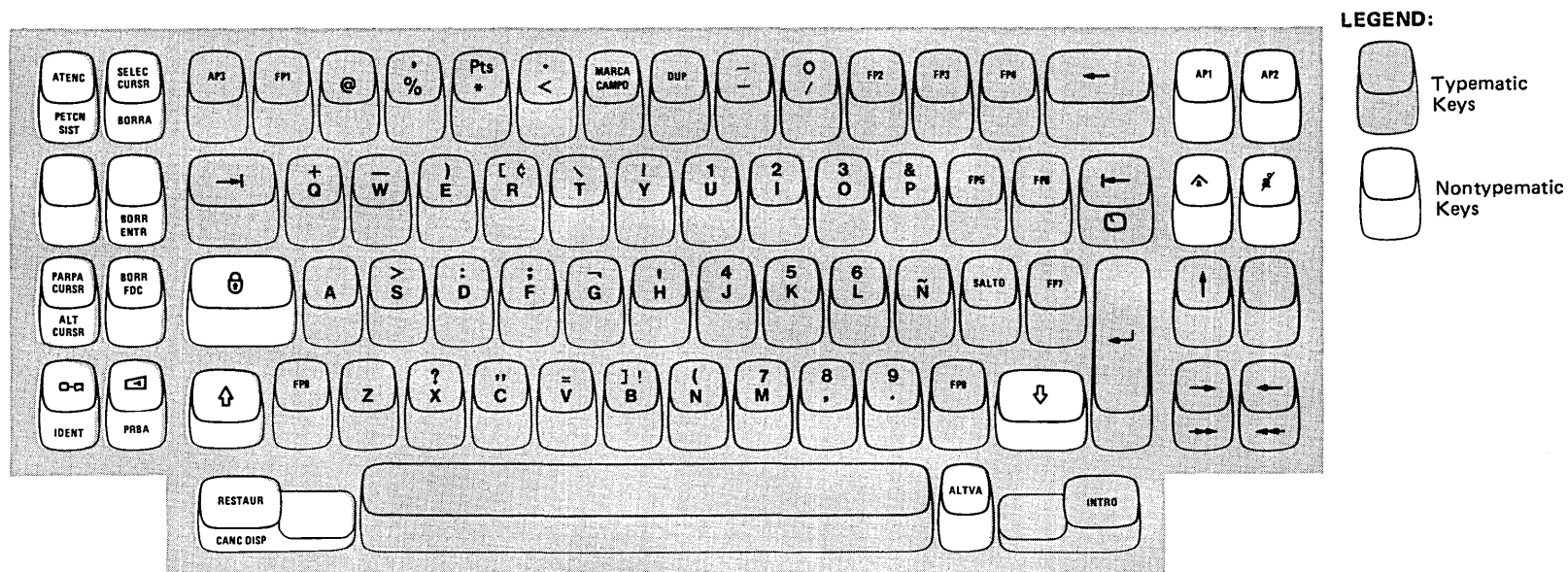


APL Keyboard

Figure 3-20 (Part 2 of 2). New Belgian Keyboards for 3278 and 3279 Display Stations (Not Supported by 3274 and 3276)

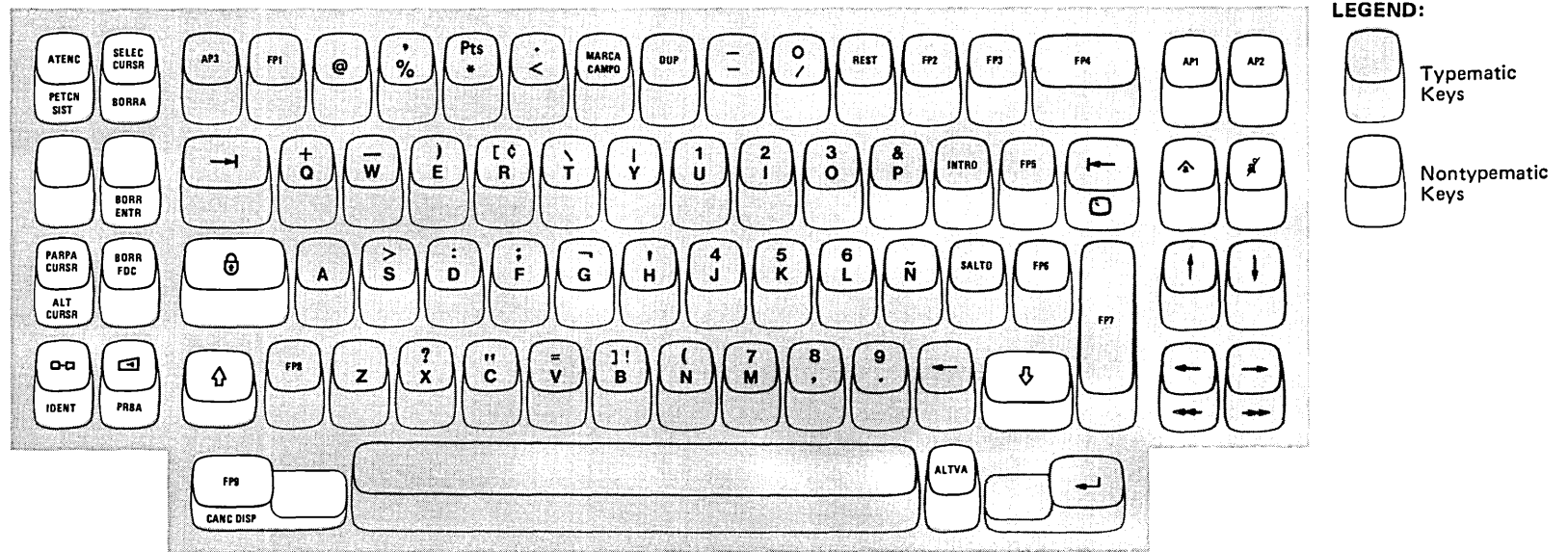


Typewriter Keyboard

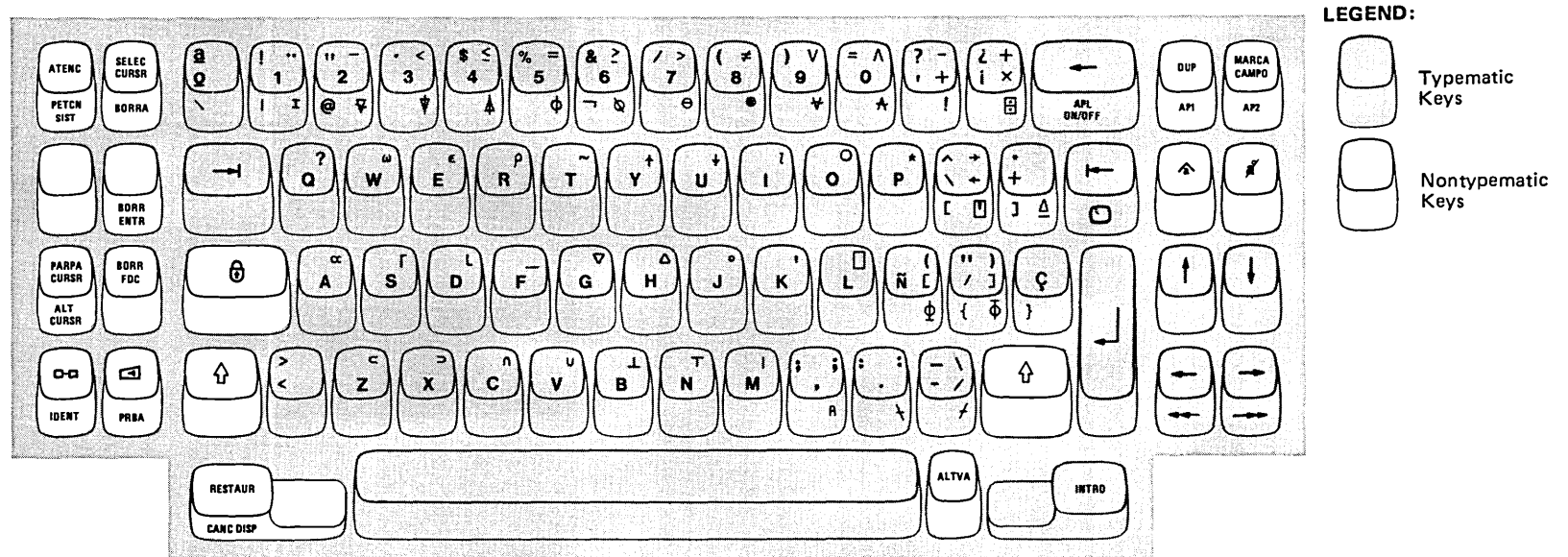


Data Entry Keyboard

Figure 3-21 (Part 1 of 2). New Spanish Keyboards for 3276, 3278, and 3279 Display Stations

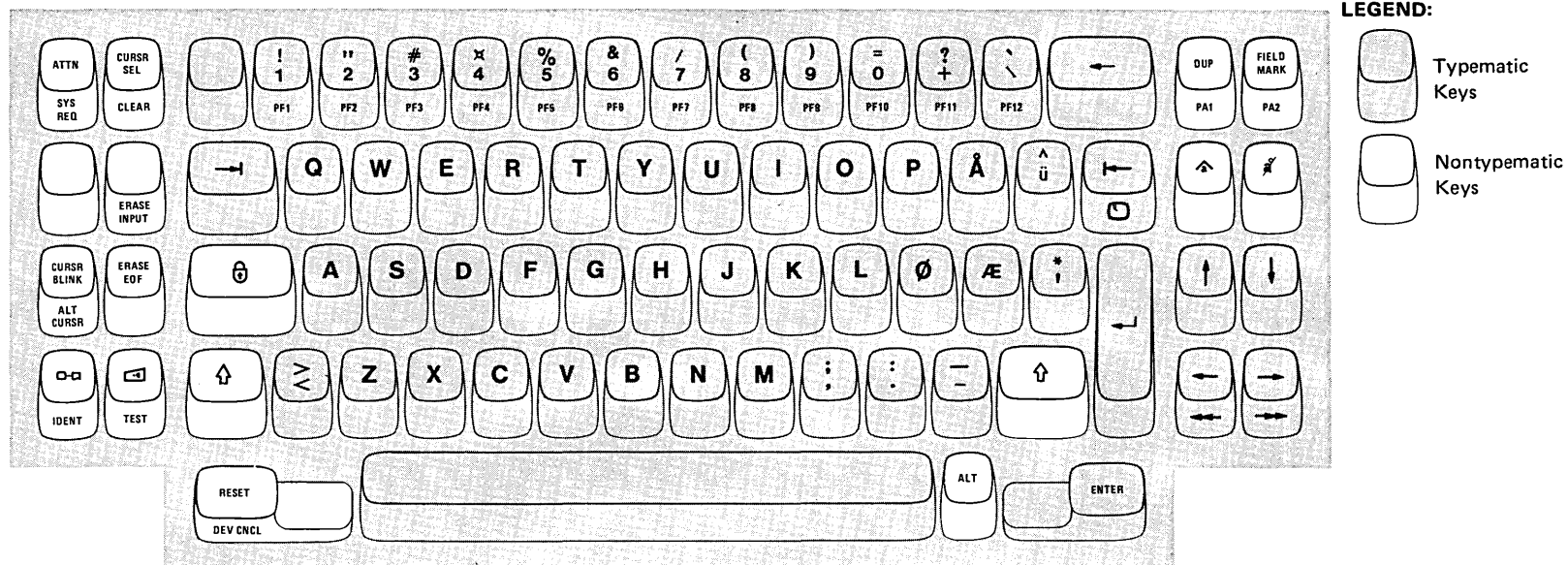


Data Entry Keypunch Keyboard

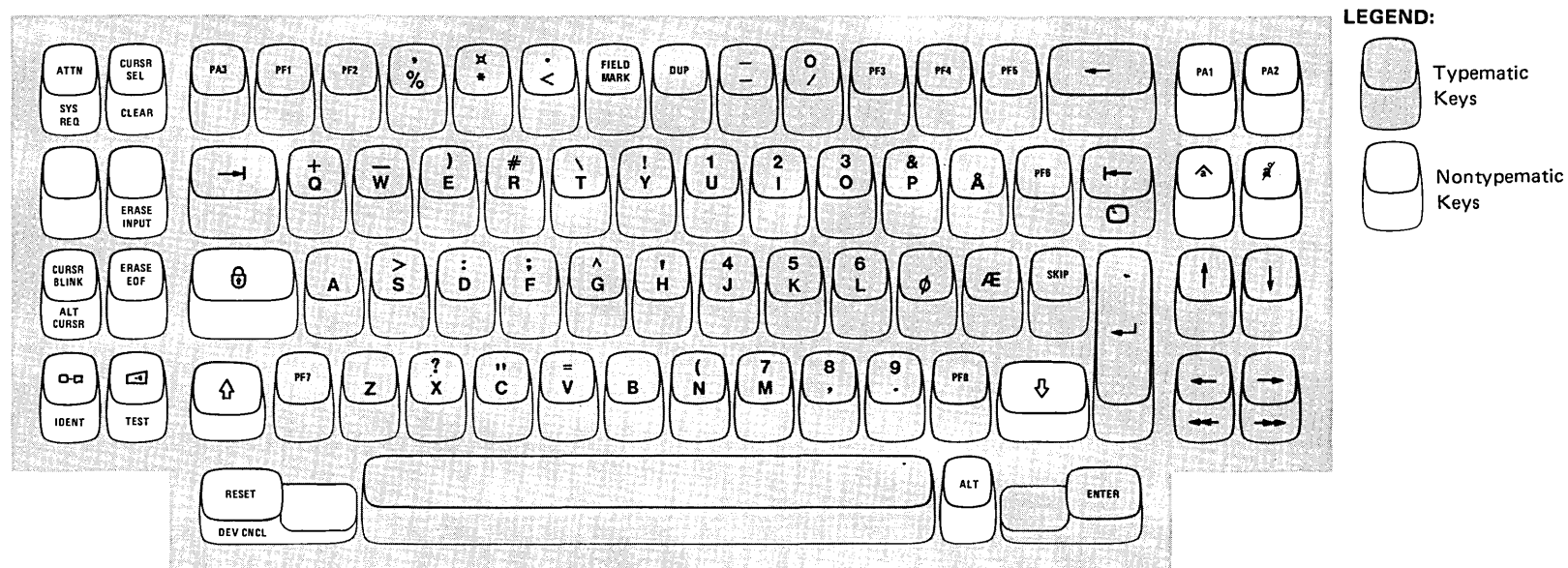


APL Keyboard

Figure 3-21 (Part 2 of 2). New Spanish Keyboards for 3276, 3278, and 3279 Display Stations

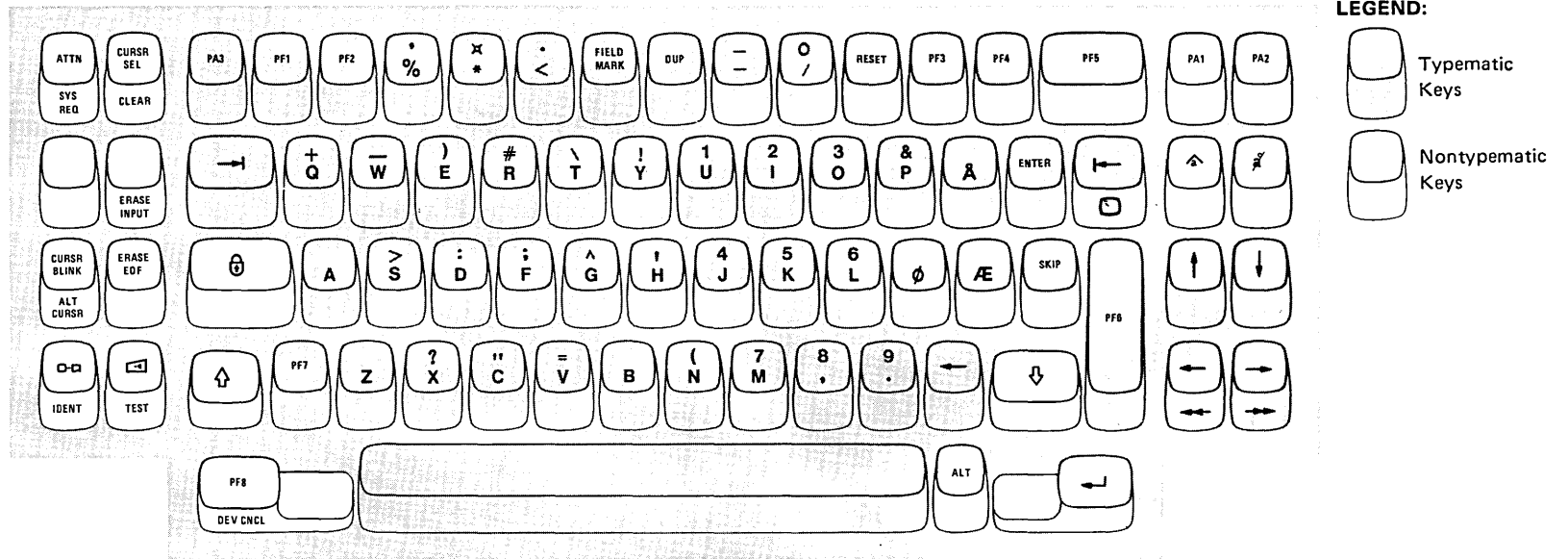


Typewriter Keyboard

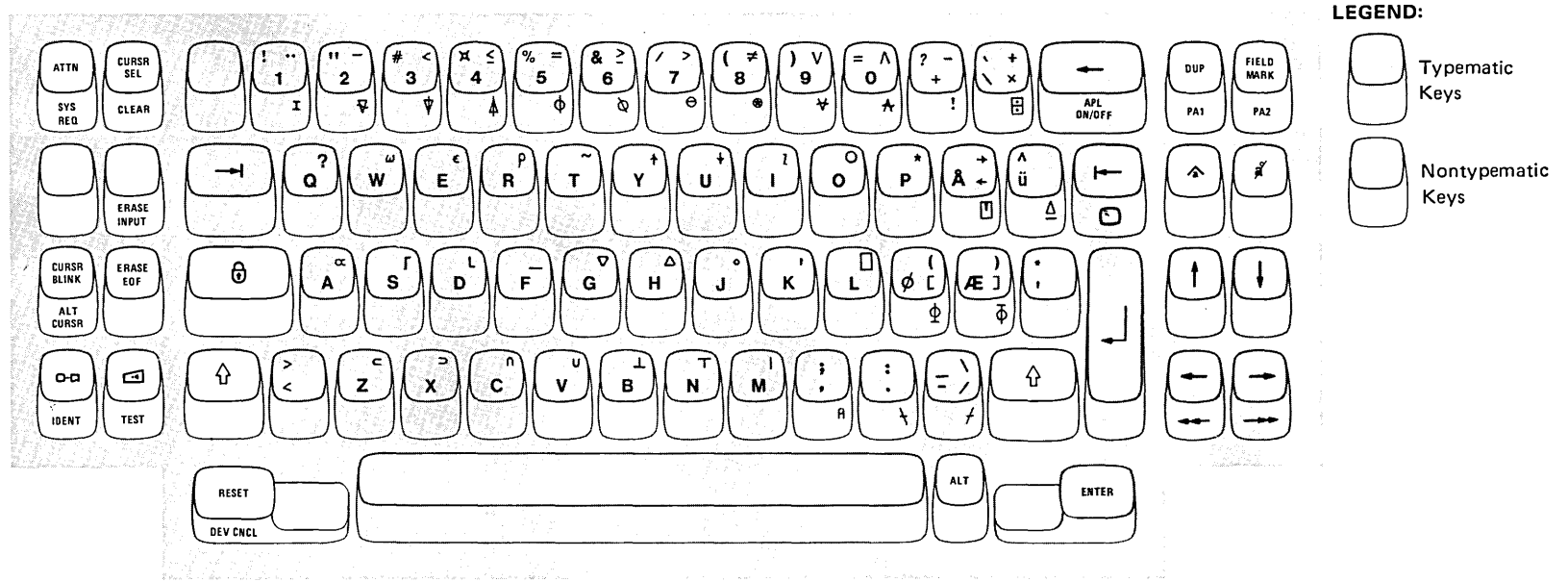


Data Entry Keyboard

Figure 3-22 (Part 1 of 2). Norwegian Keyboards for 3276, 3278, and 3279 Display Stations

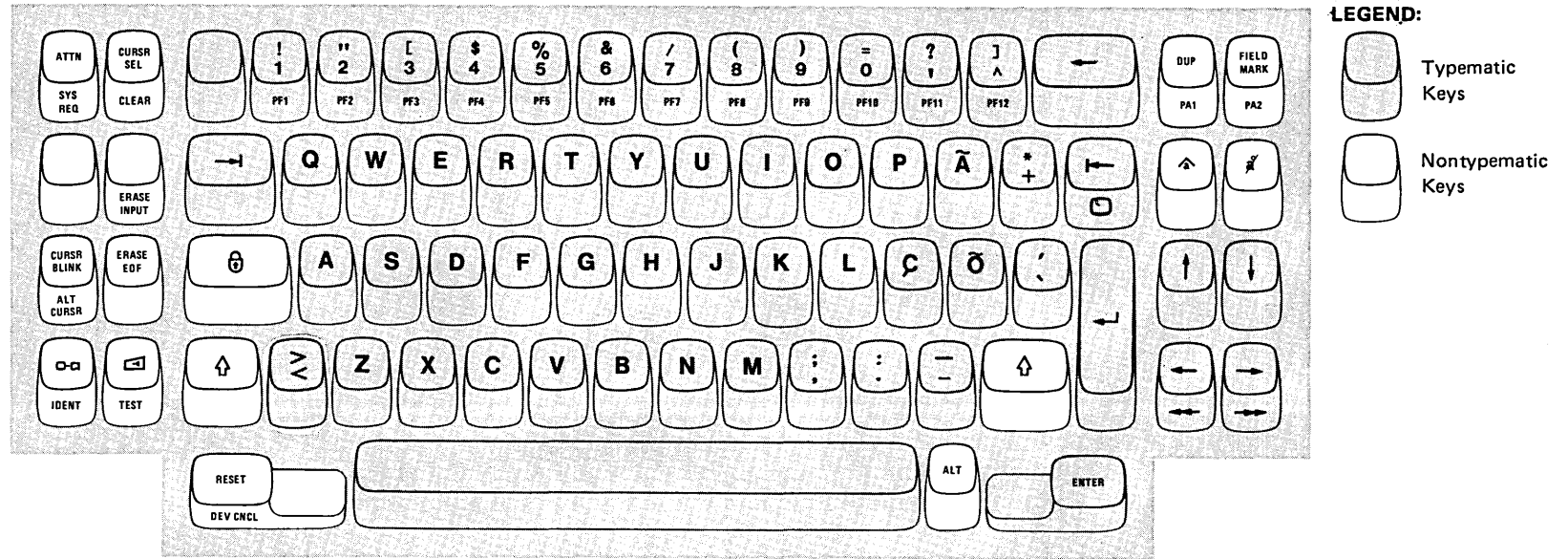


Data Entry Keypunch Keyboard

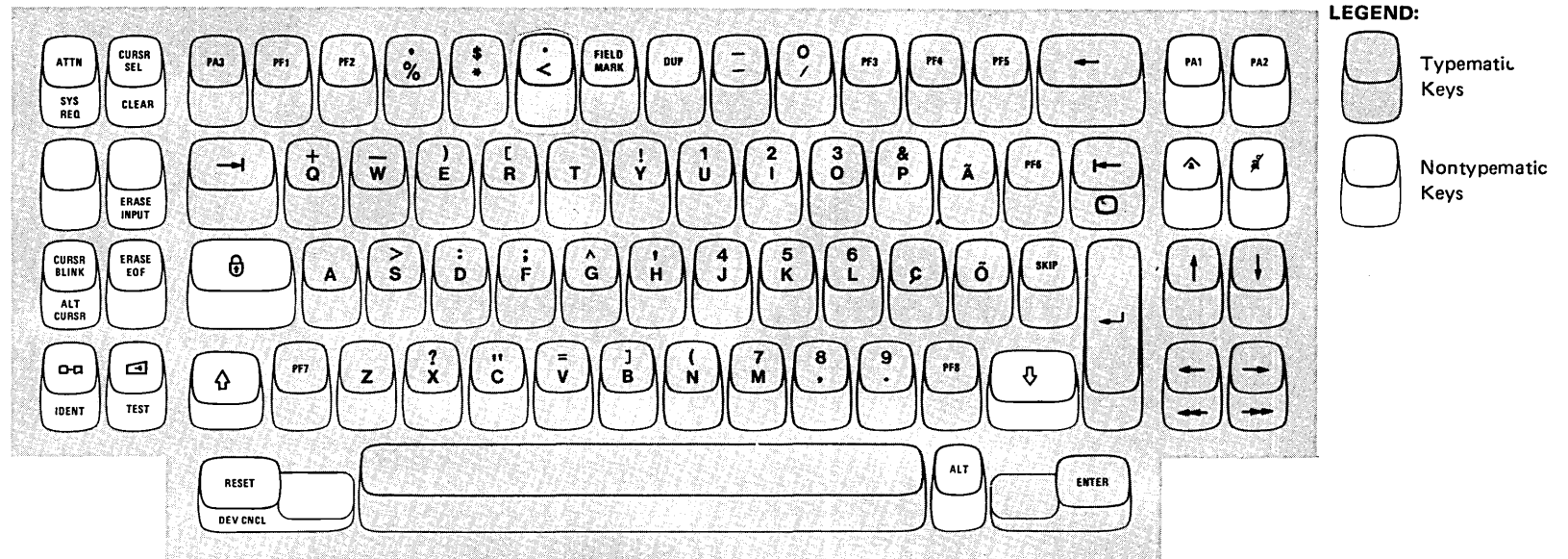


APL Keyboard

Figure 3-22 (Part 2 of 2). Norwegian Keyboards for 3276, 3278, and 3279 Display Stations

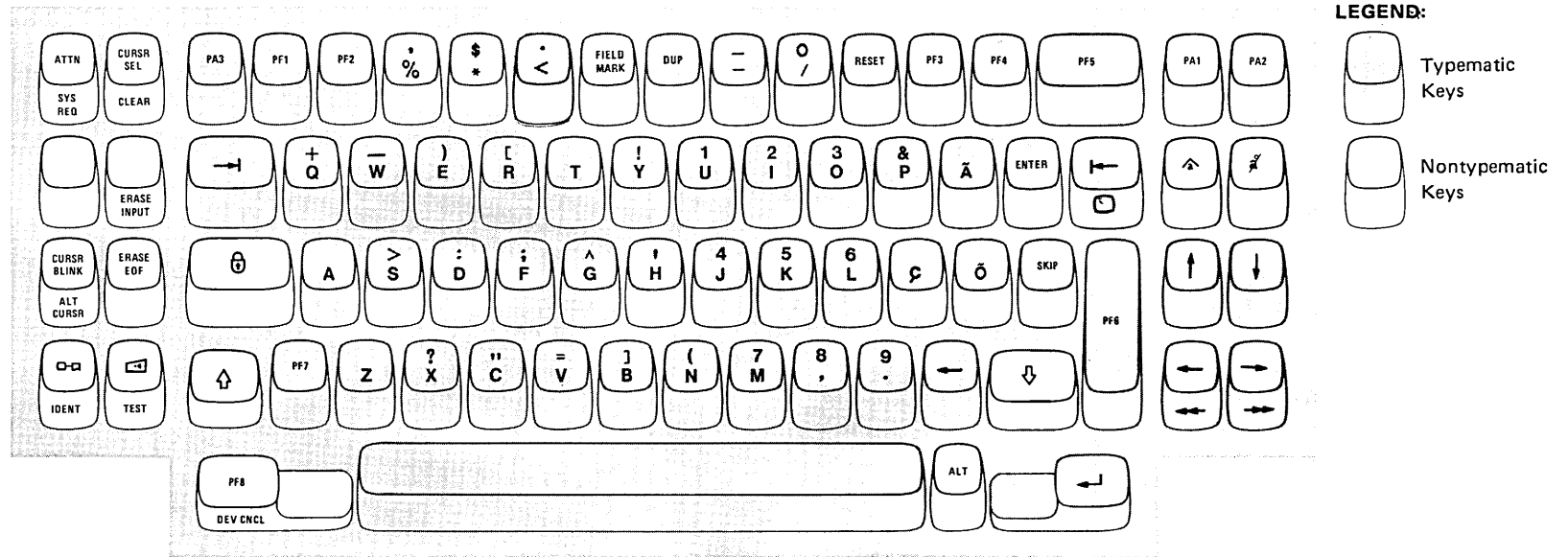


Typewriter Keyboard

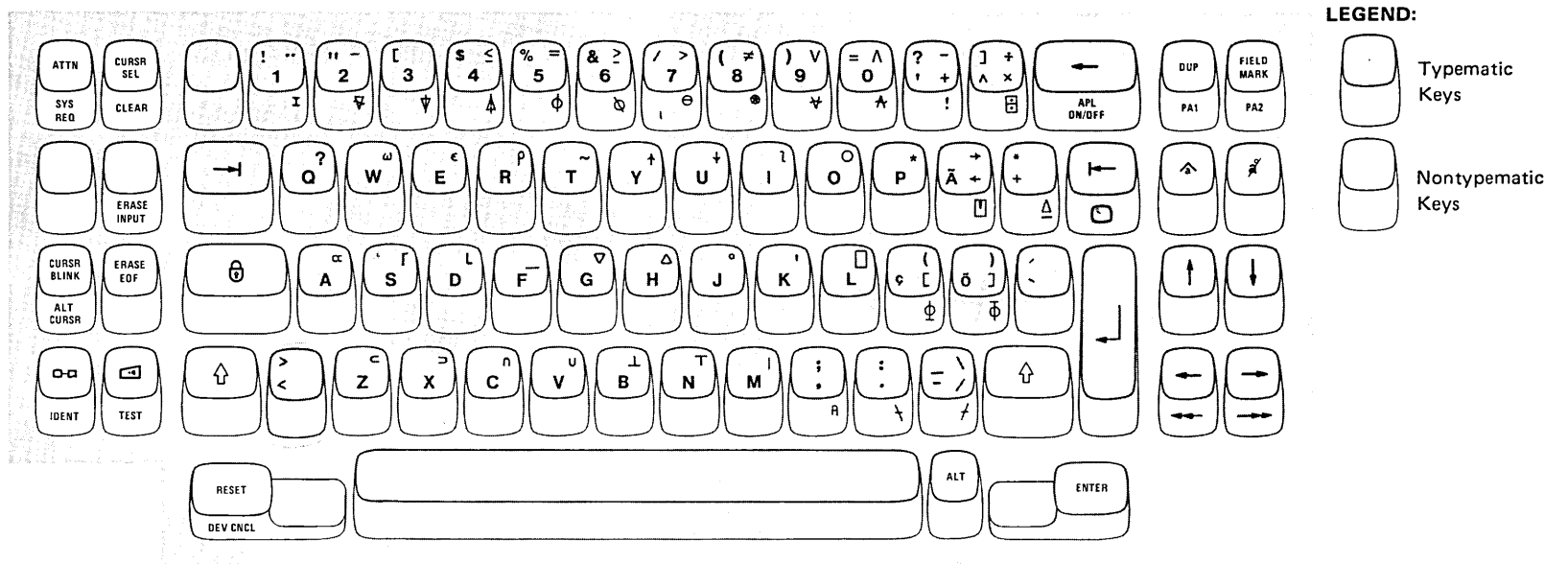


Data Entry Keyboard

Figure 3-23 (Part 1 of 2). Portuguese Keyboards for 3276, 3278, and 3279 Display Stations

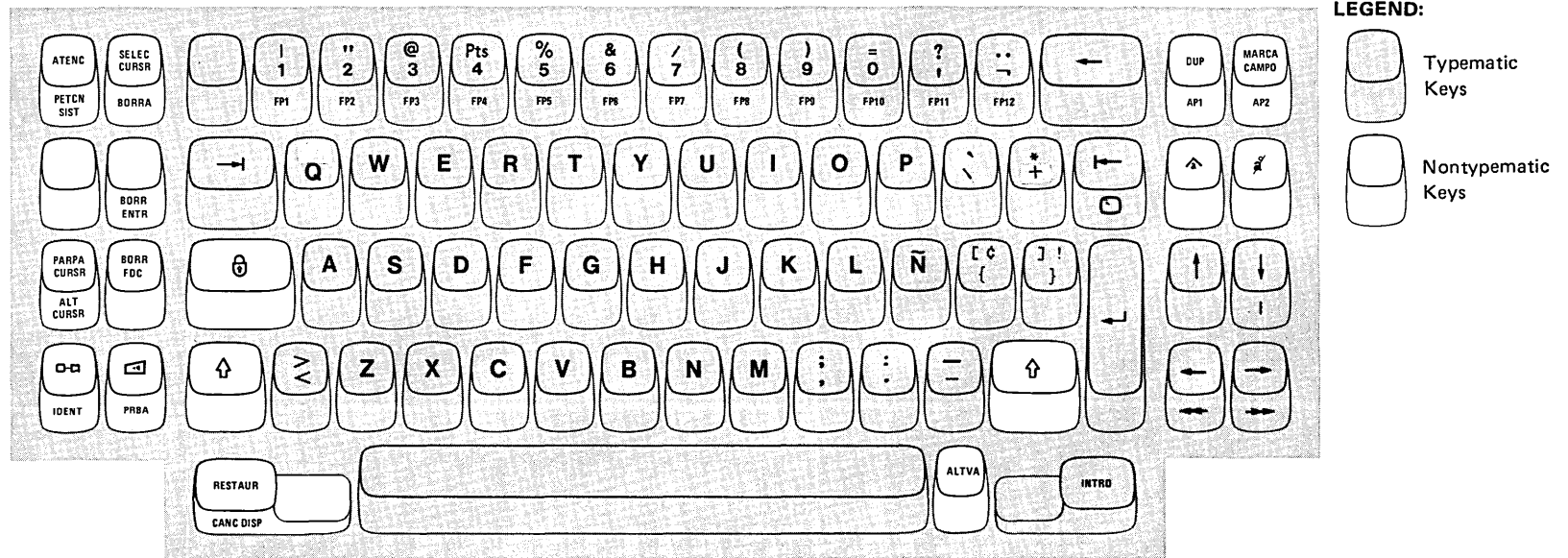


Data Entry Keypunch Keyboard

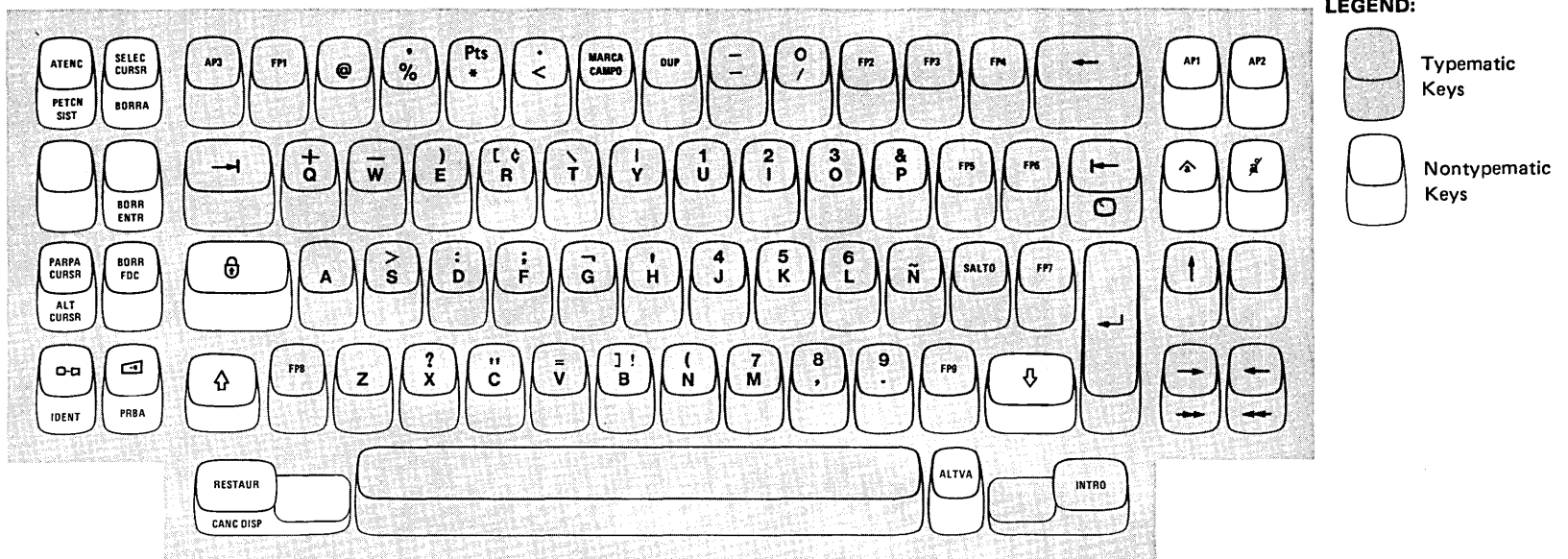


APL Keyboard

Figure 3-23 (Part 2 of 2). Portuguese Keyboards for 3276, 3278, and 3279 Display Stations

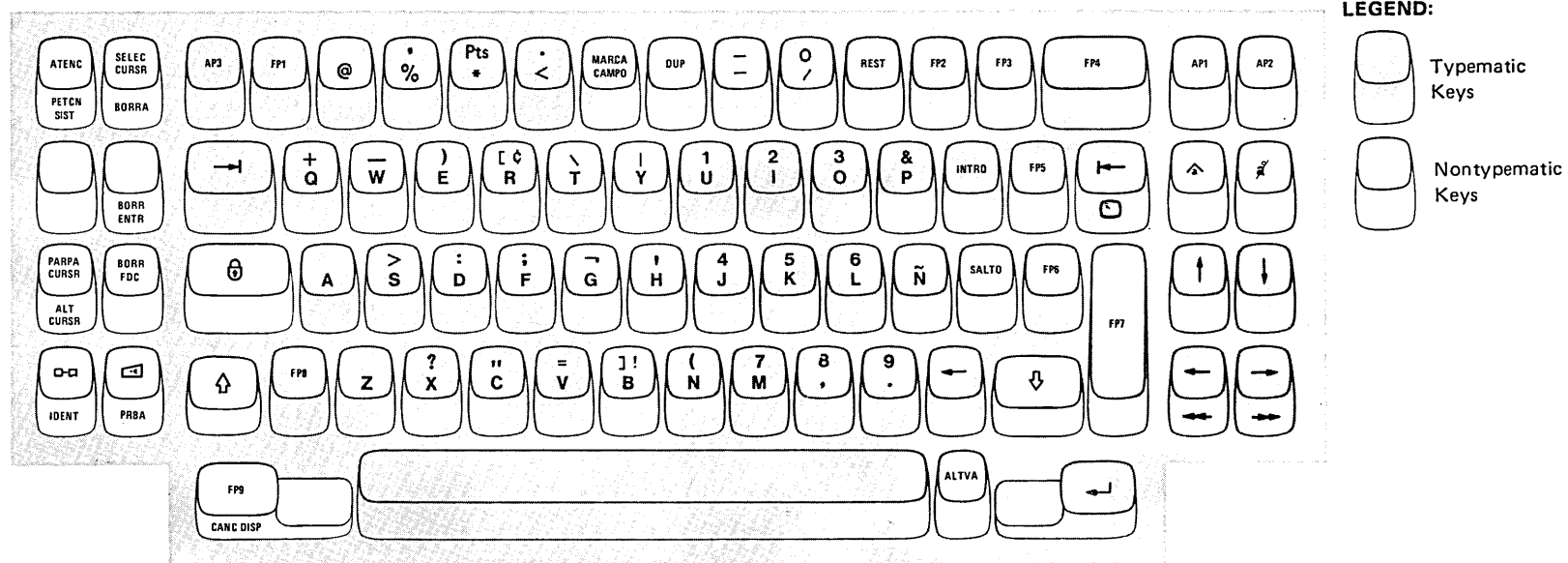


Typewriter Keyboard

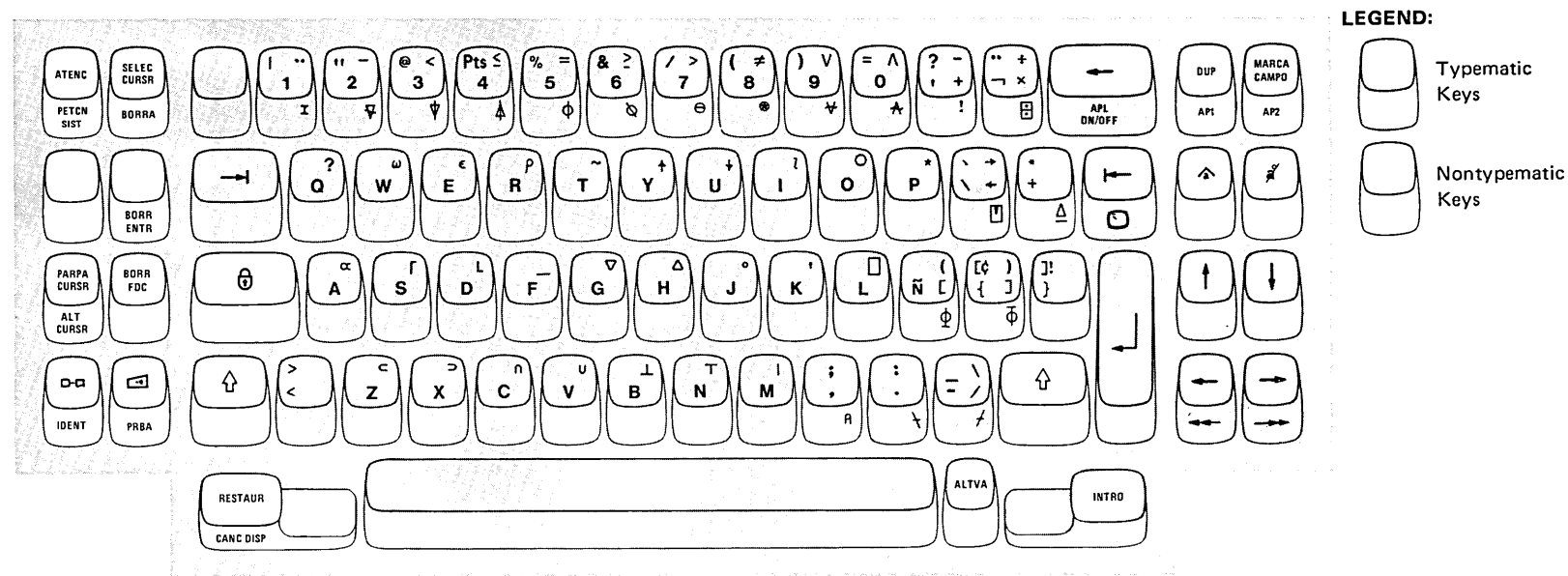


Data Entry Keyboard

Figure 3-24 (Part 1 of 2). Spanish Keyboards for 3276, 3278, and 3279 Display Stations

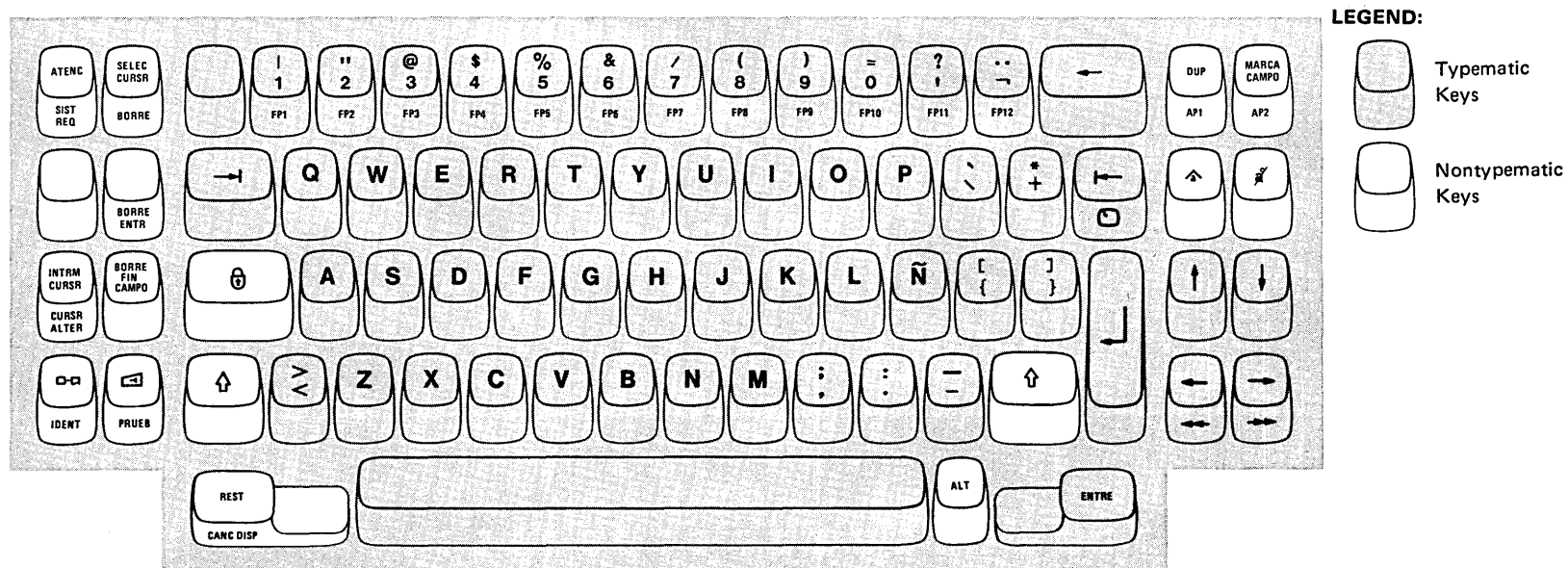


Data Entry Keypunch Keyboard

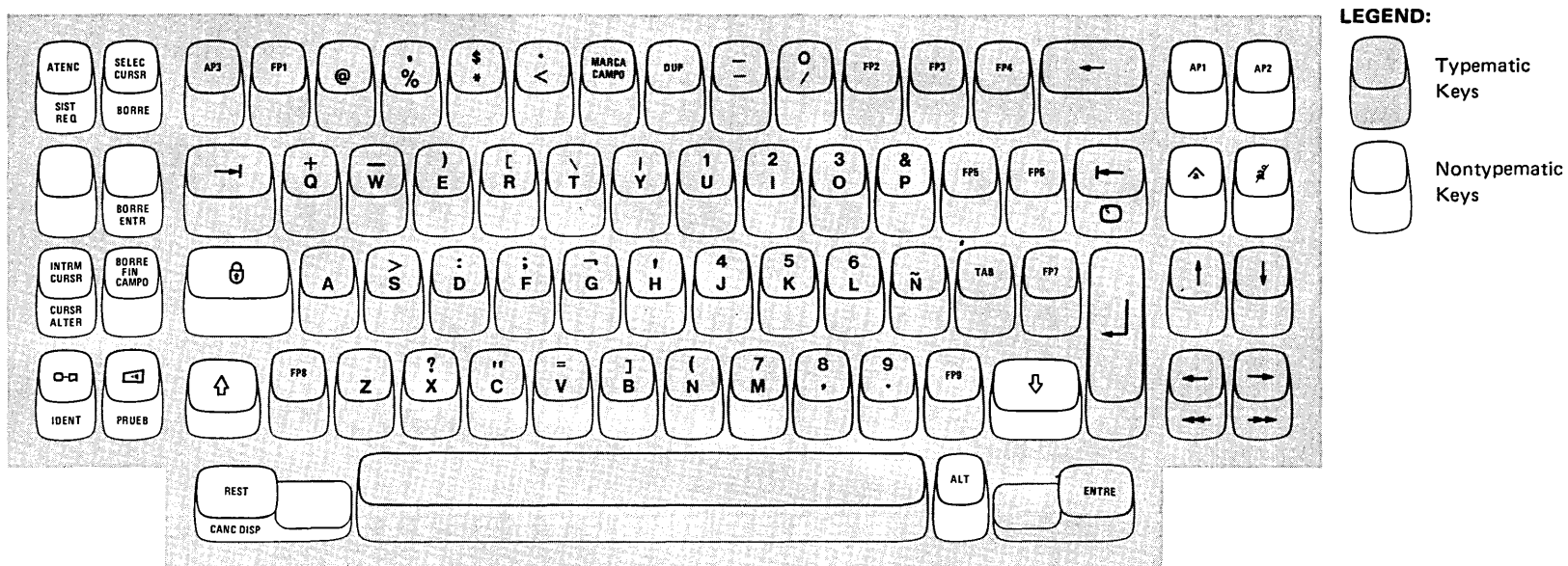


APL Keyboard

Figure 3-24 (Part 2 of 2). Spanish Keyboards for 3276, 3278, and 3279 Display Stations

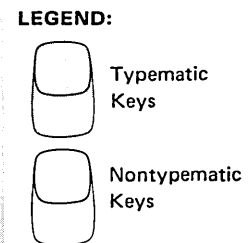


Typewriter Keyboard

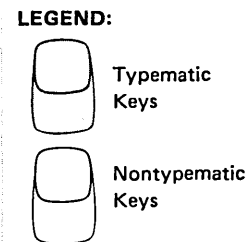


Data Entry Keyboard

Figure 3-25 (Part 1 of 2). Spanish-Speaking Keyboards for 3276, 3278, and 3279 Display Stations

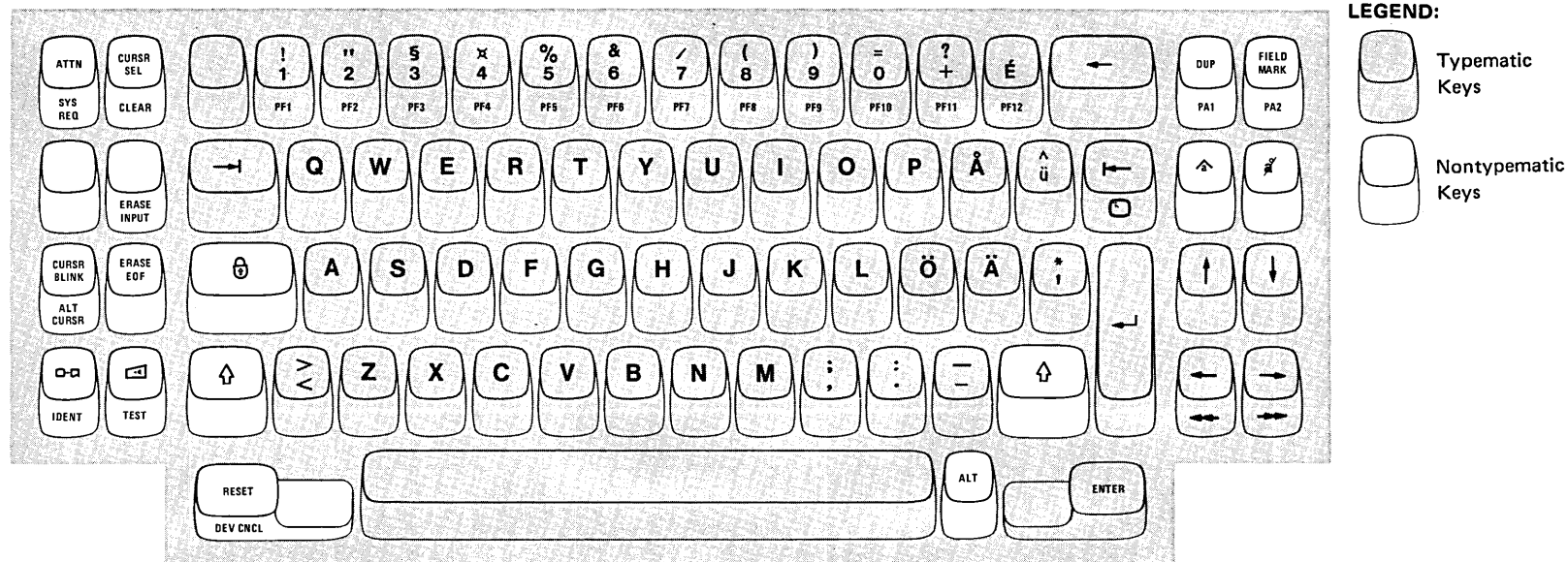


Data Entry Keypunch Keyboard

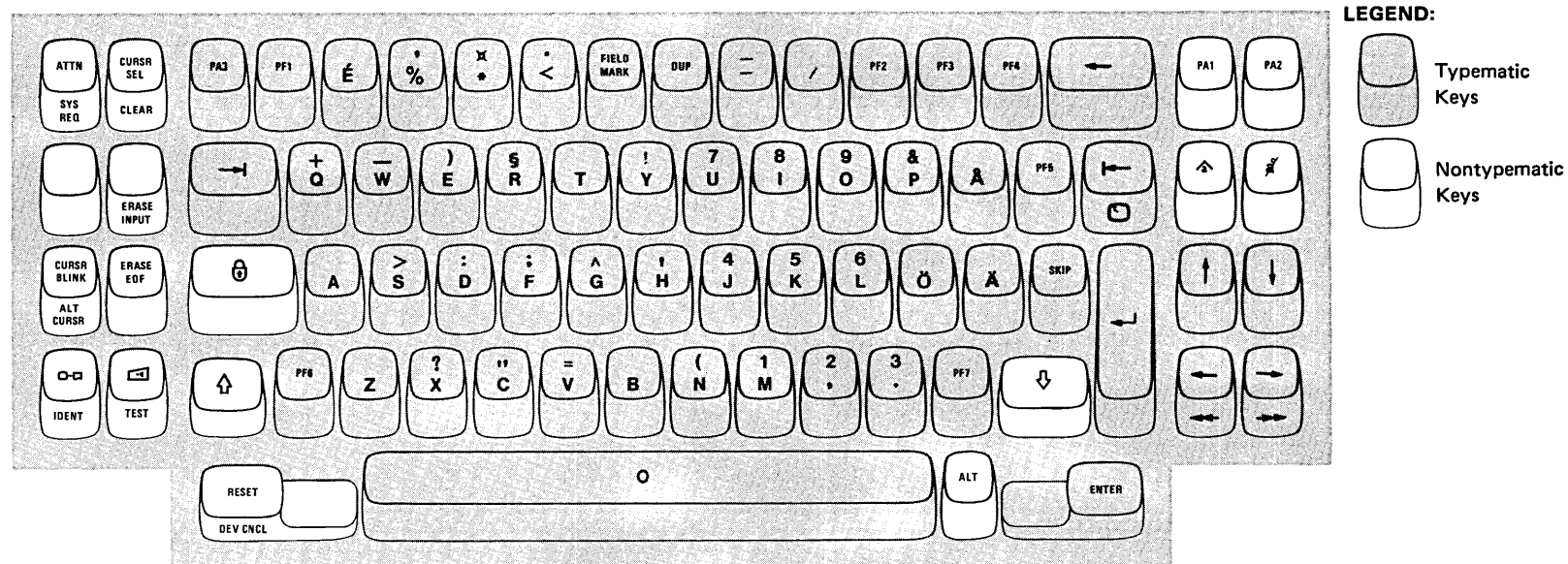


APL Keyboard

Figure 3-25 (Part 2 of 2). Spanish-Speaking Keyboards for 3276, 3278, and 3279 Display Stations

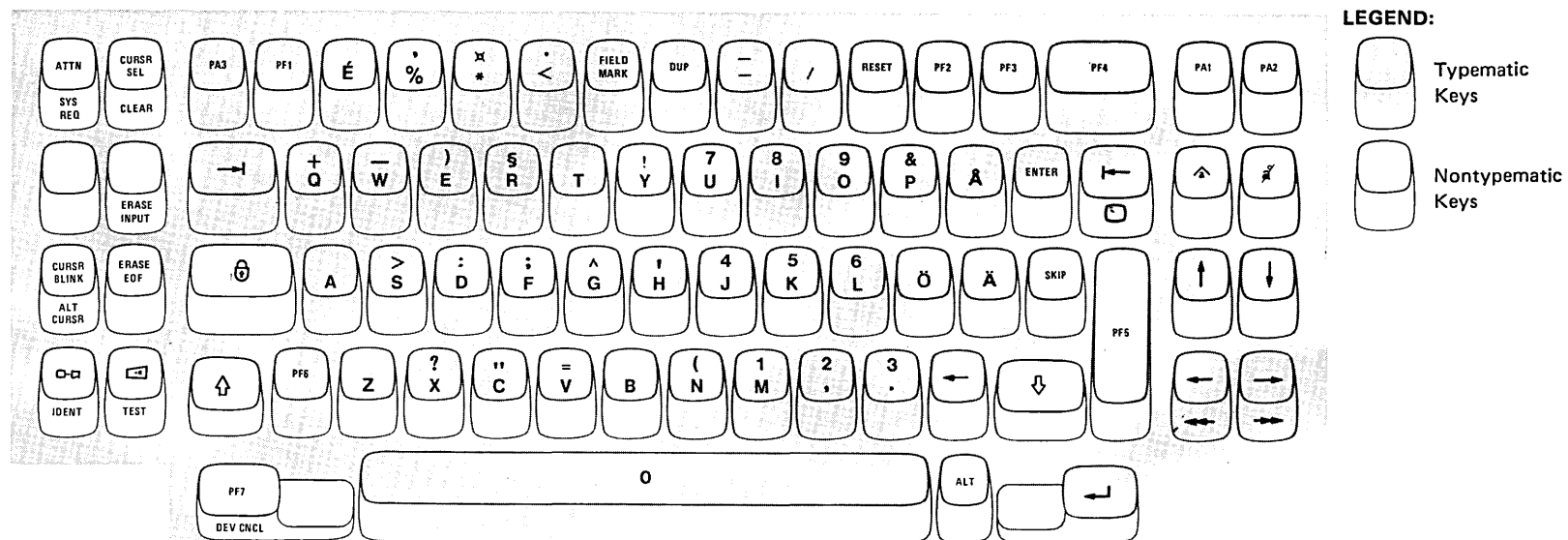


Typewriter Keyboard

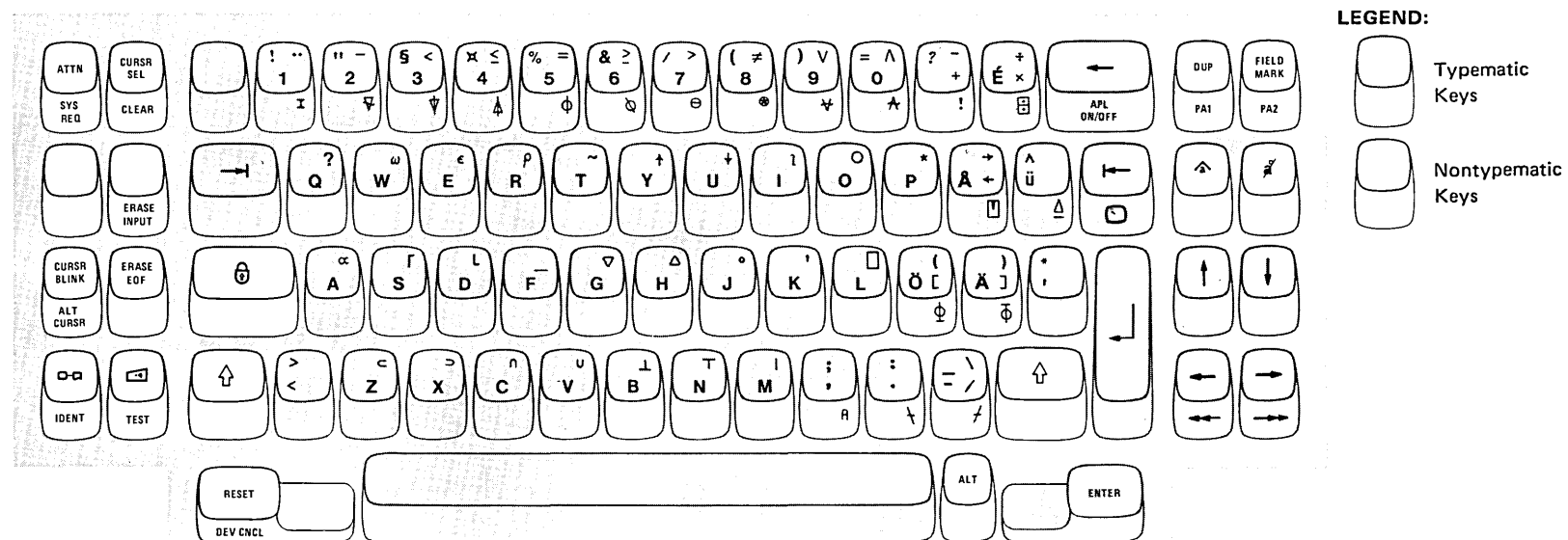


Data Entry Keyboard

Figure 3-26 (Part 1 of 2). Swedish Keyboards for 3276, 3278, and 3279 Display Stations

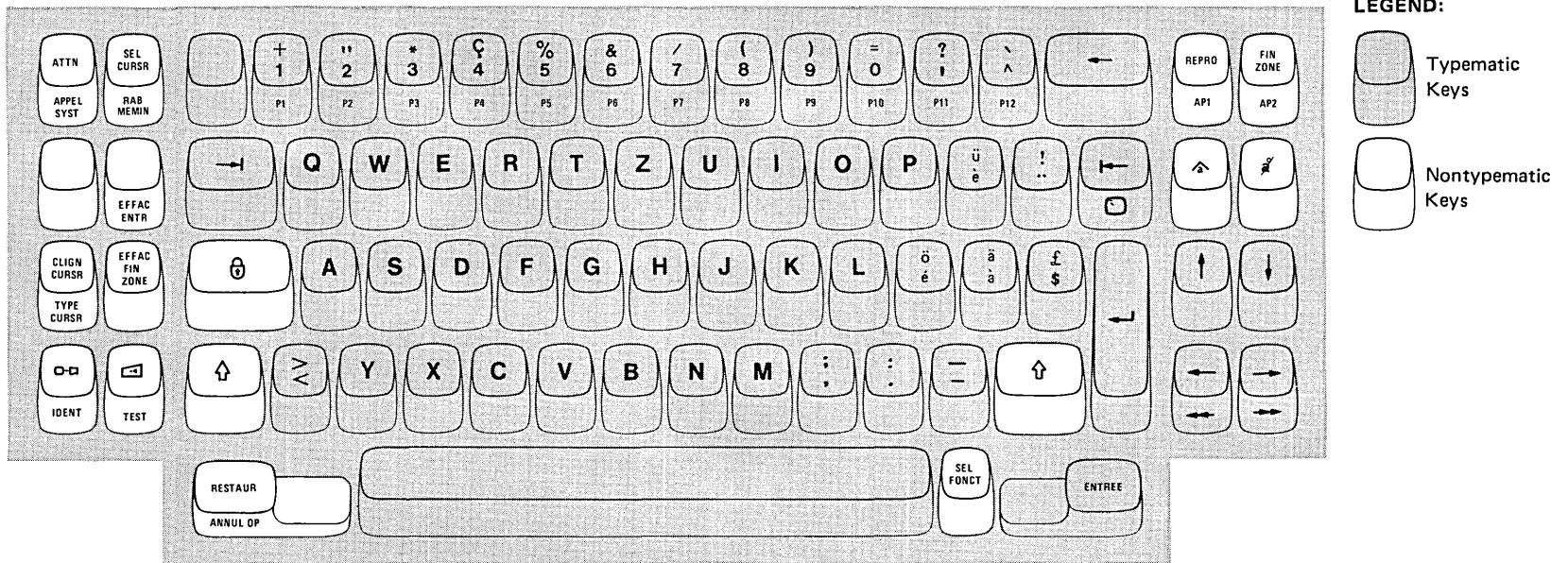


Data Entry Keypunch Keyboard

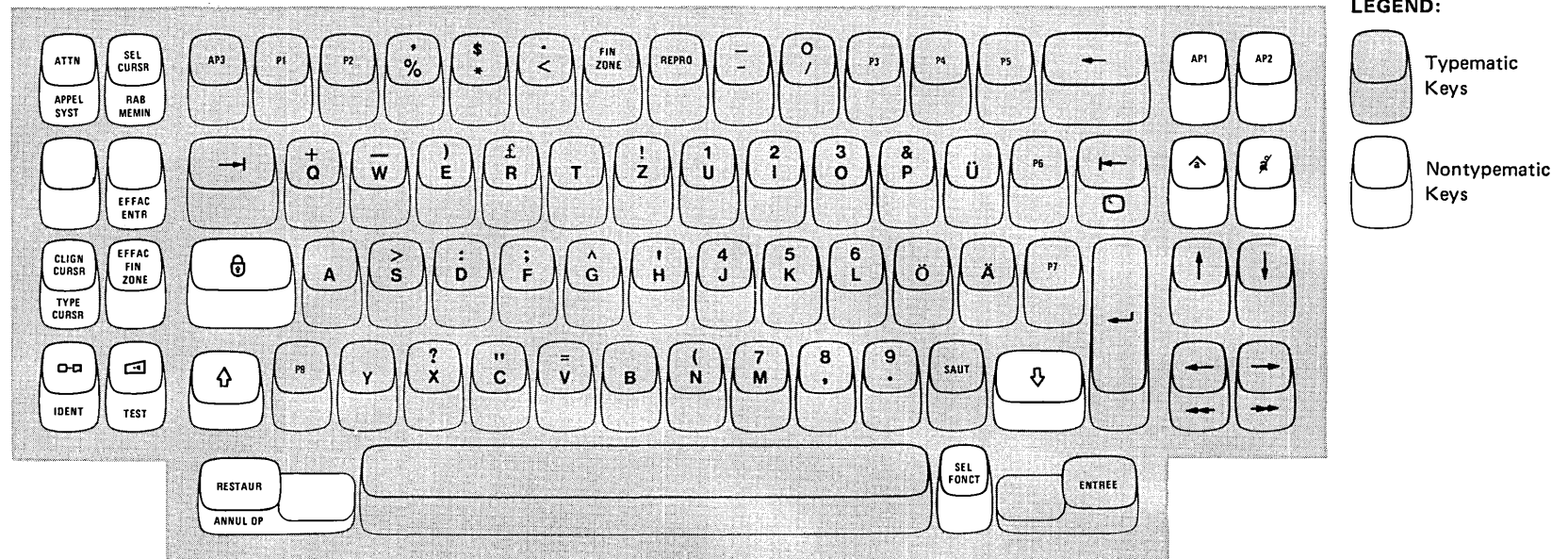


APL Keyboard

Figure 3-26 (Part 2 of 2). Swedish Keyboards for 3276, 3278, and 3279 Display Stations

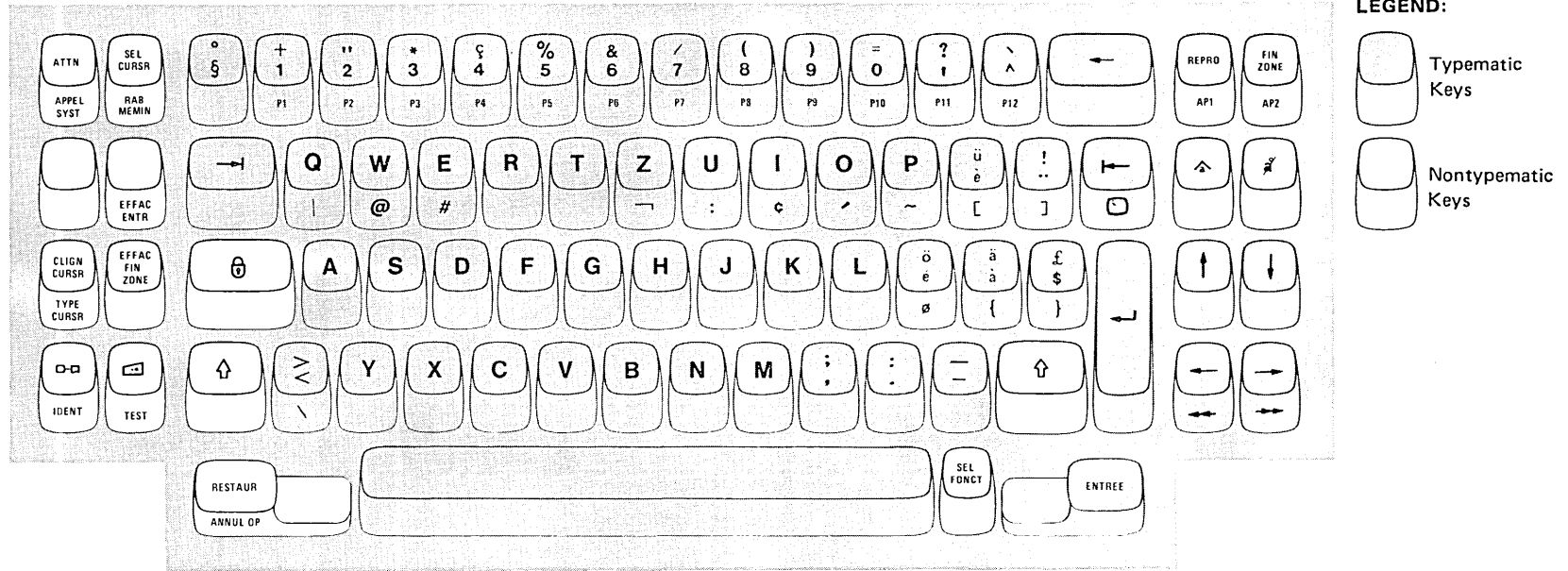


Typewriter Keyboard

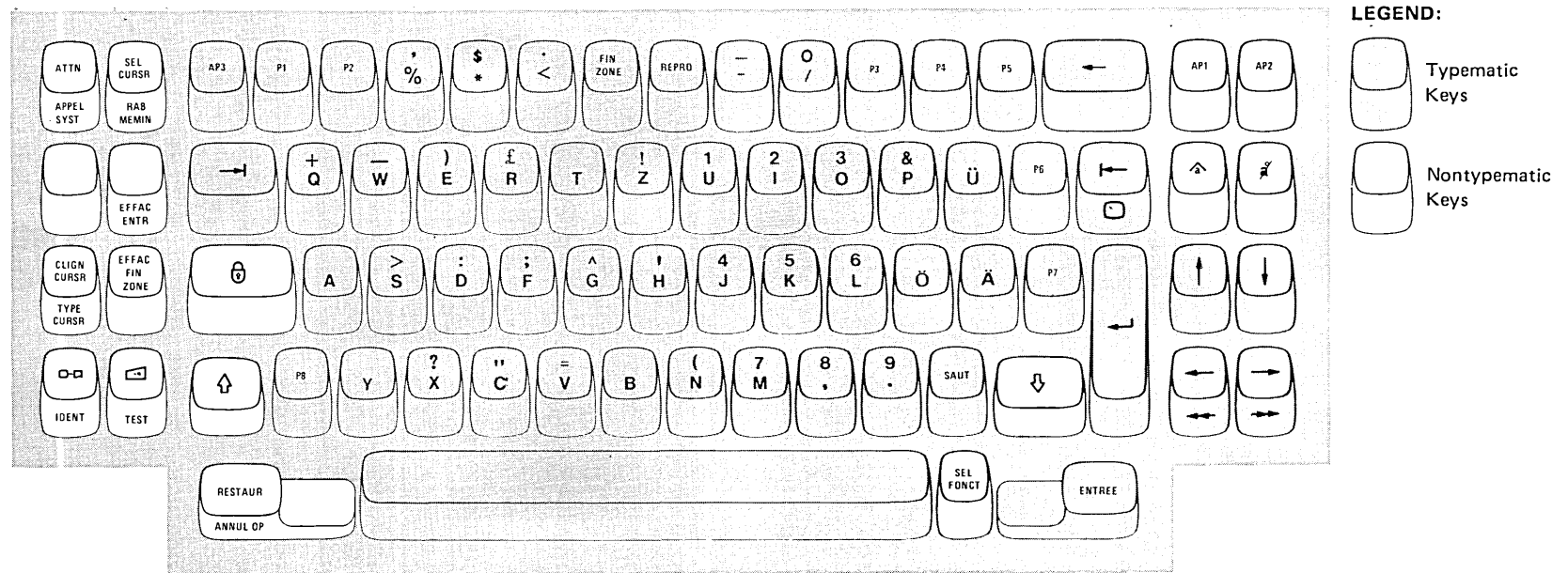


Data Entry Keyboard

Figure 3-27. Swiss-French Keyboards for 3276, 3278, and 3279 Display Stations (Not Supported by 3174)

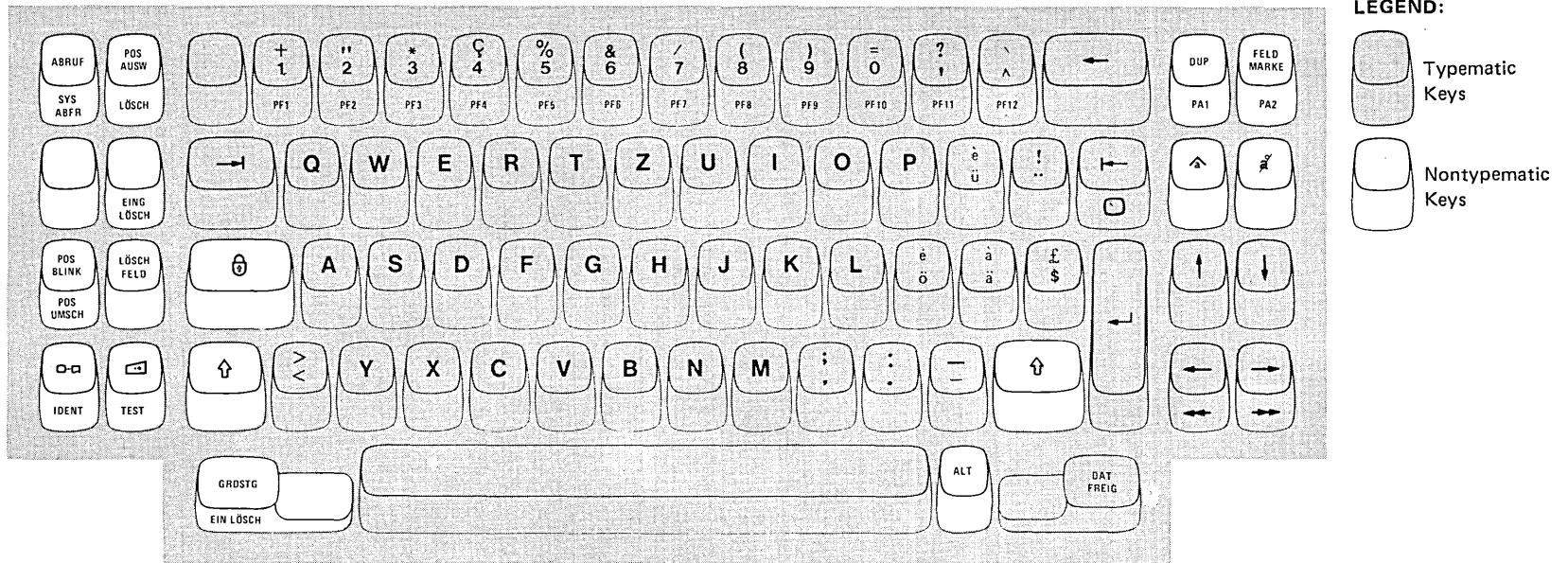


Typewriter Keyboard

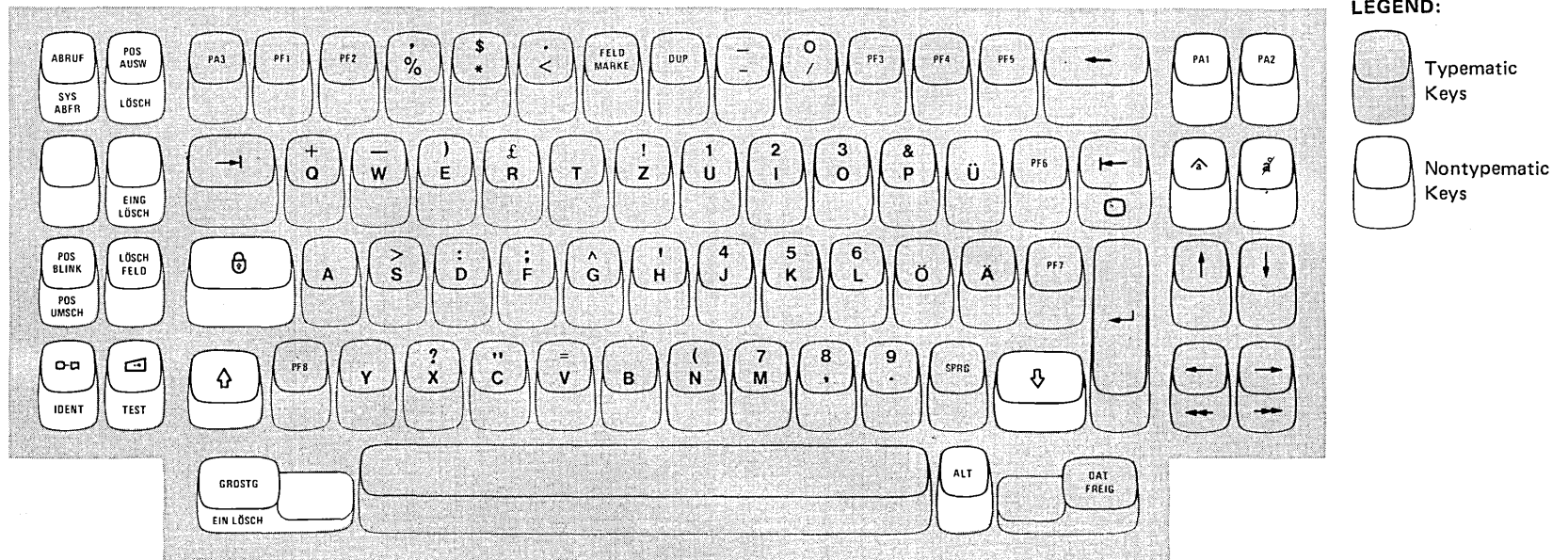


Data Entry Keyboard

Figure 3-28. Swiss-French Extended Keyboards for 3278 and 3279 Display Stations (Not Supported by 3174, 3274, and 3276)

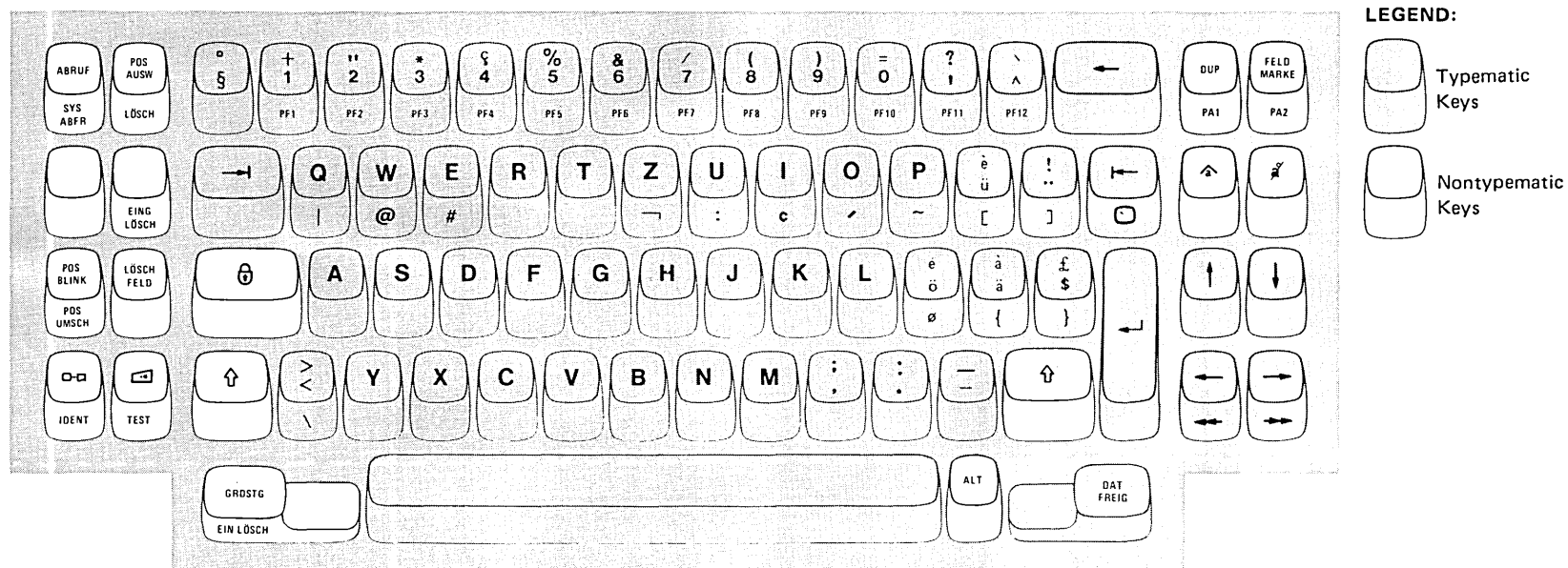


Typewriter Keyboard

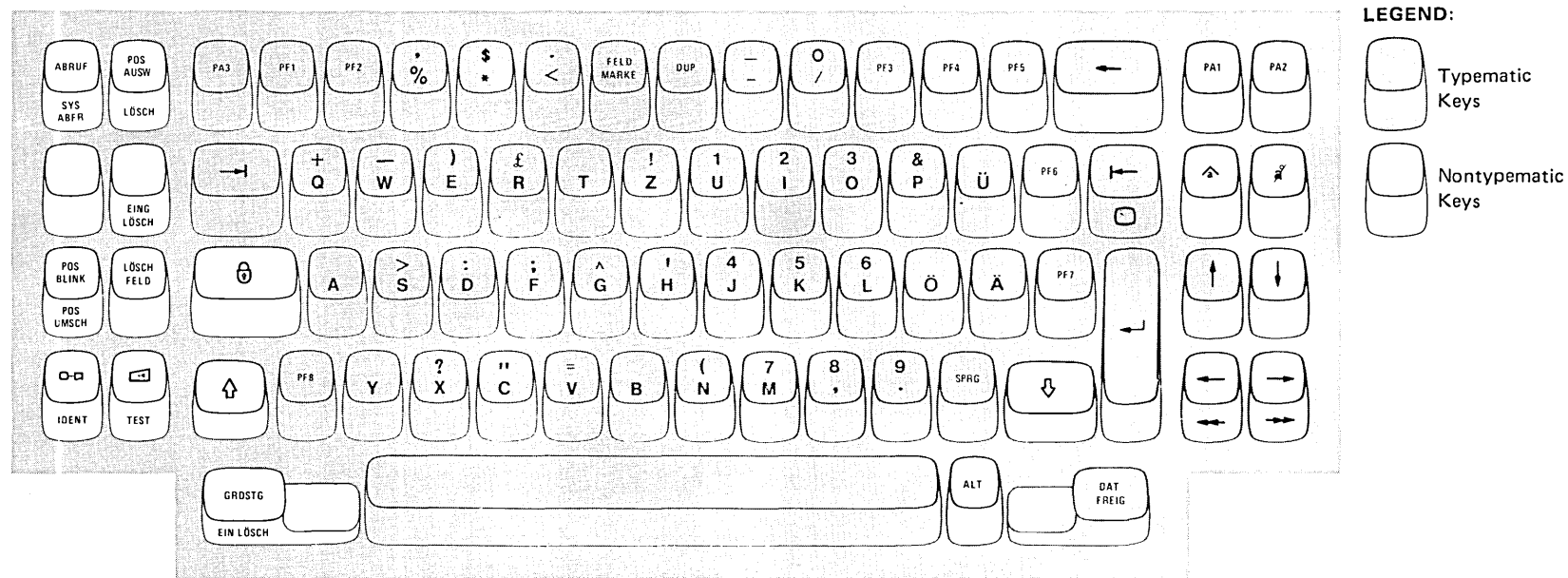


Data Entry Keyboard

Figure 3-29. Swiss-German Keyboards for 3276, 3278, and 3279 Display Stations (Not Supported by 3174)

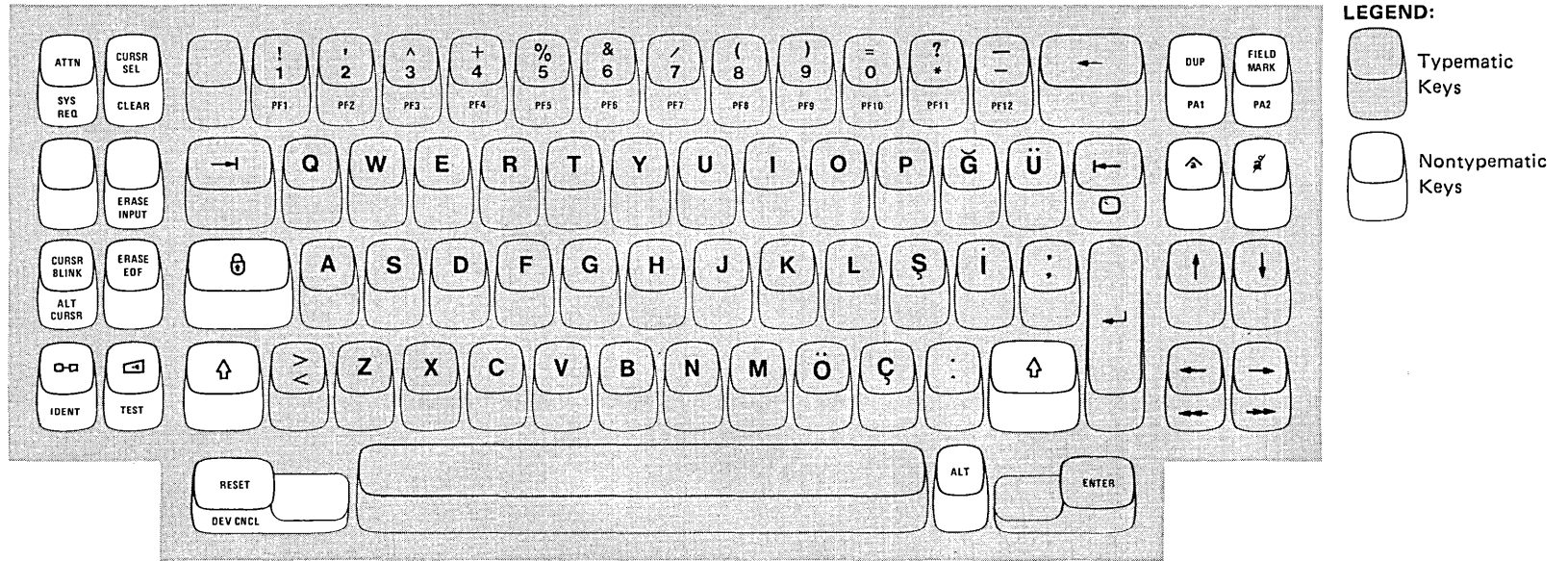


Typewriter Keyboard



Data Entry Keyboard

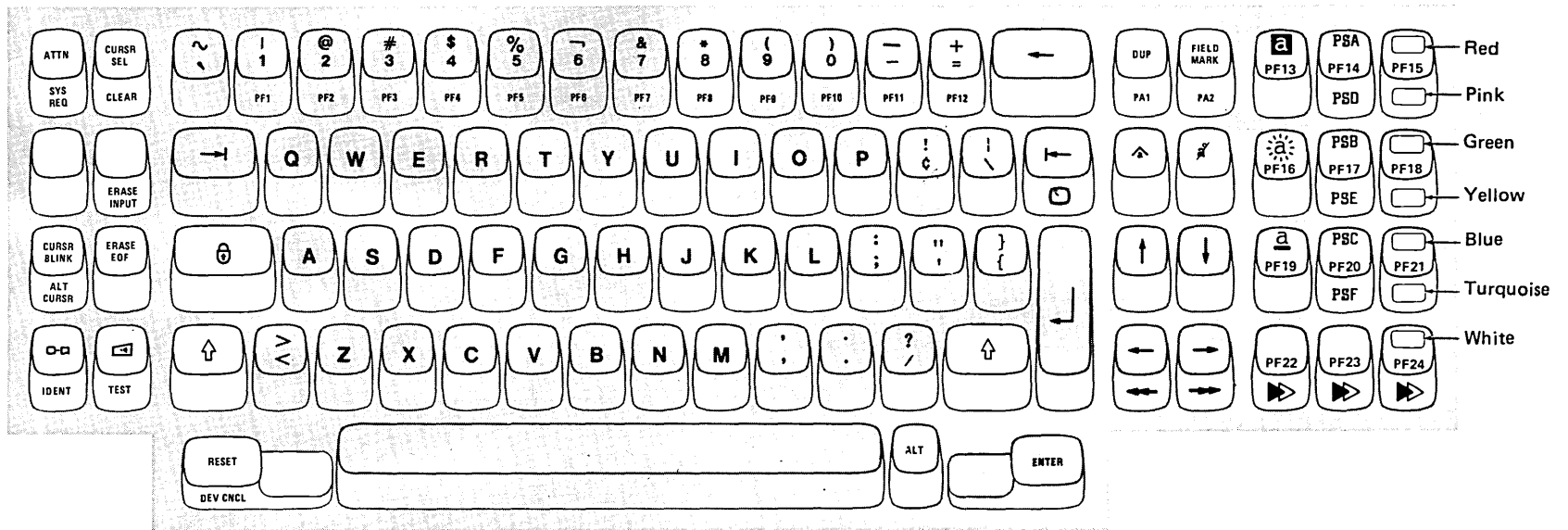
Figure 3-30. Swiss-German Extended Keyboards for 3278 and 3279 Display Stations (Not Supported by 3174, 3274, and 3276)



Typewriter Keyboard

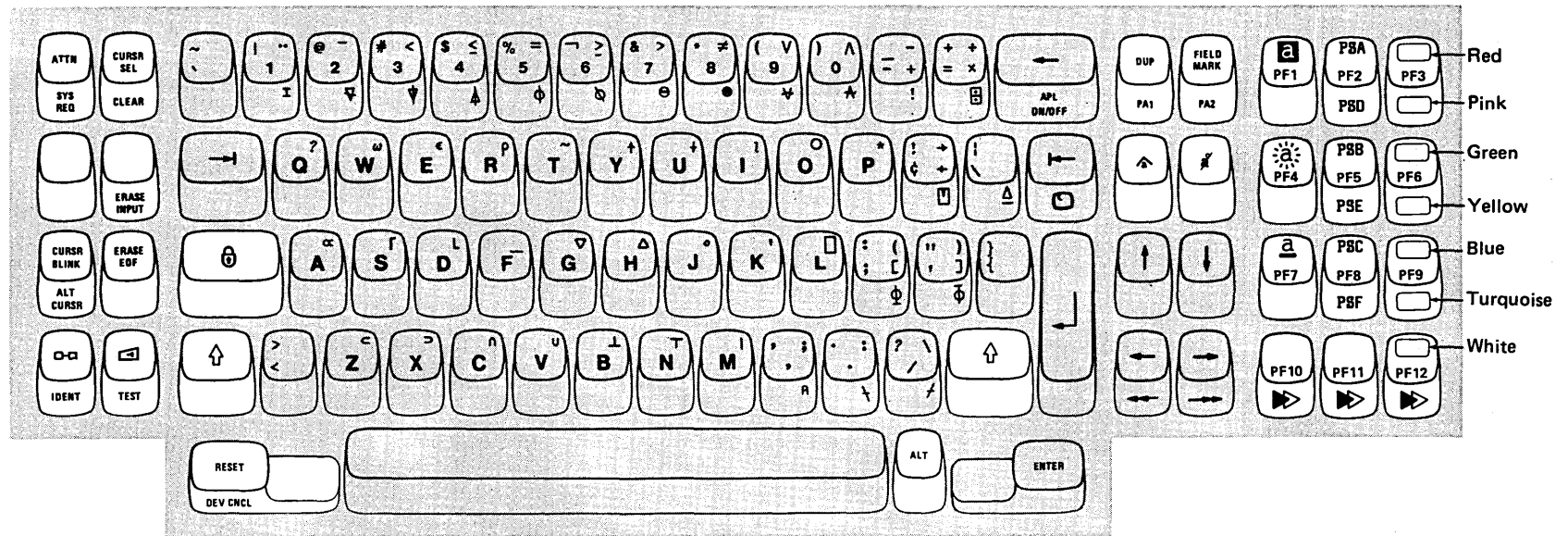
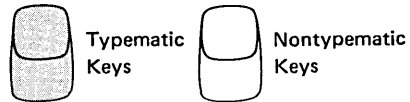
Note: The Turkish keyboard is a 3278 and 3279 Display Station RPQ item.

Figure 3-31. Turkish Keyboard for 3278 and 3279 Display Stations (Not Supported by 3274 and 3276)



Attribute Select Typewriter Keyboard

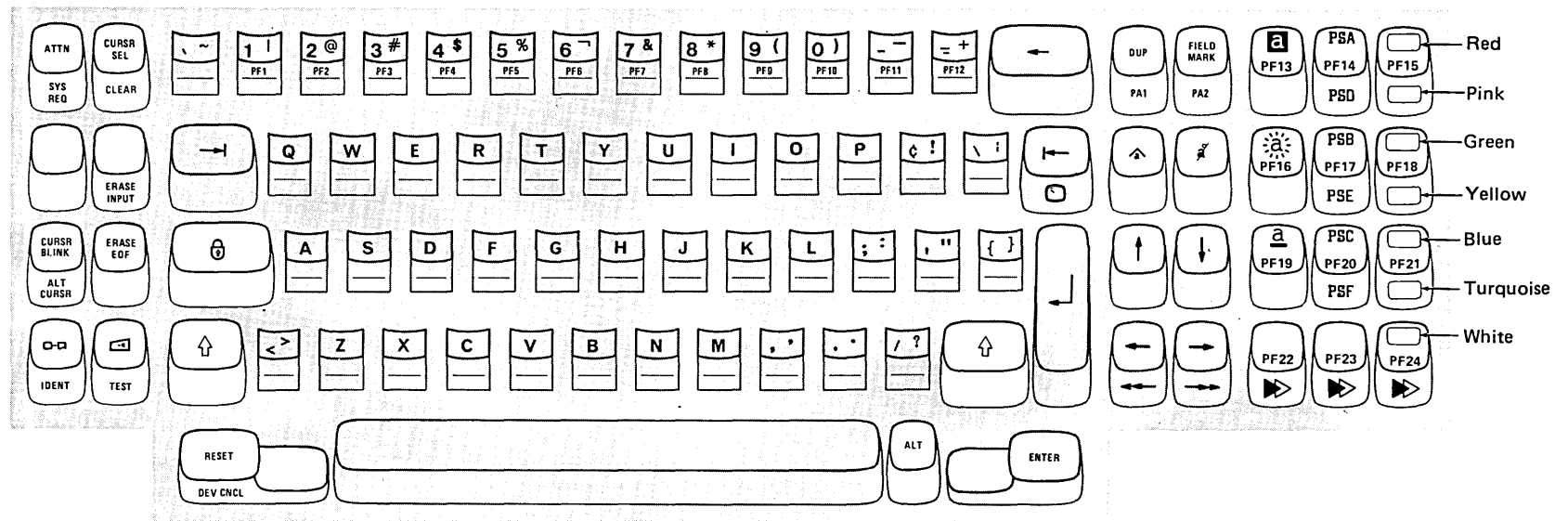
Figure 3-32 (Part 1 of 2). Attribute Select Keyboards (English [U.S.]) for 3276, 3278, and 3279 Display Stations

**LEGEND:**

Note: On 87-key and 88-key APL keyboards, program function keys are assigned PF1 through PF12 rather than PF13 through PF24.

Attribute Select Typewriter/APL Keyboard

Figure 3-32 (Part 2 of 2). Attribute Select Keyboards (English [U.S.]) for 3276, 3278, and 3279 Display Stations

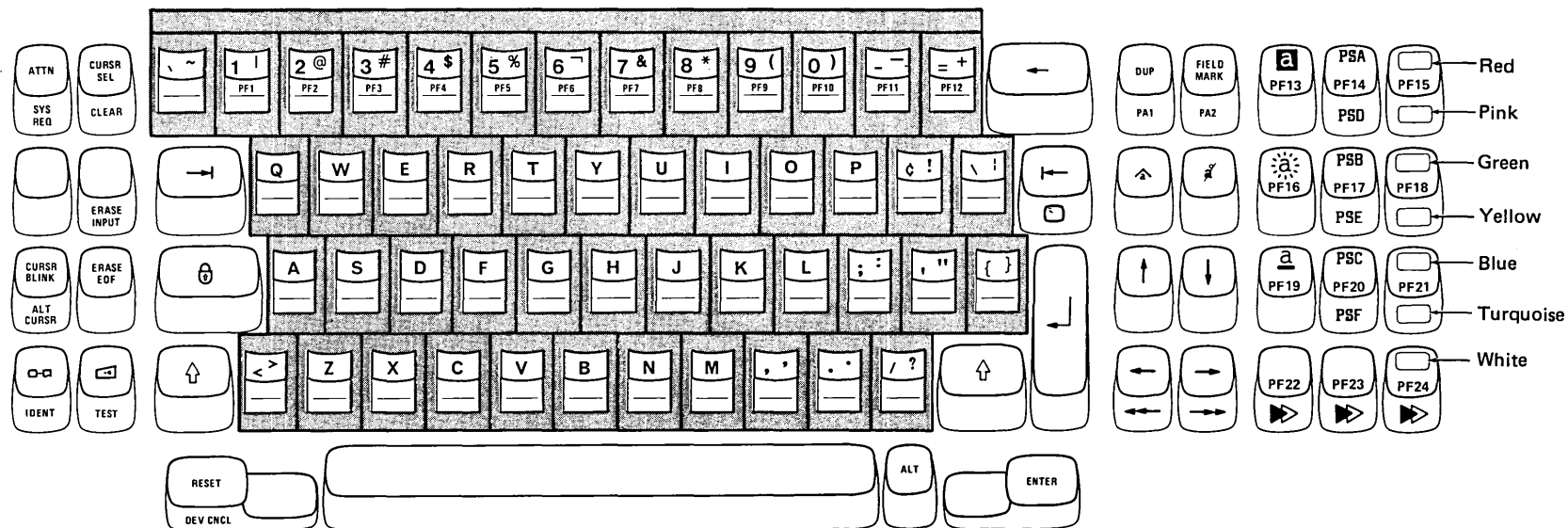


LEGEND:



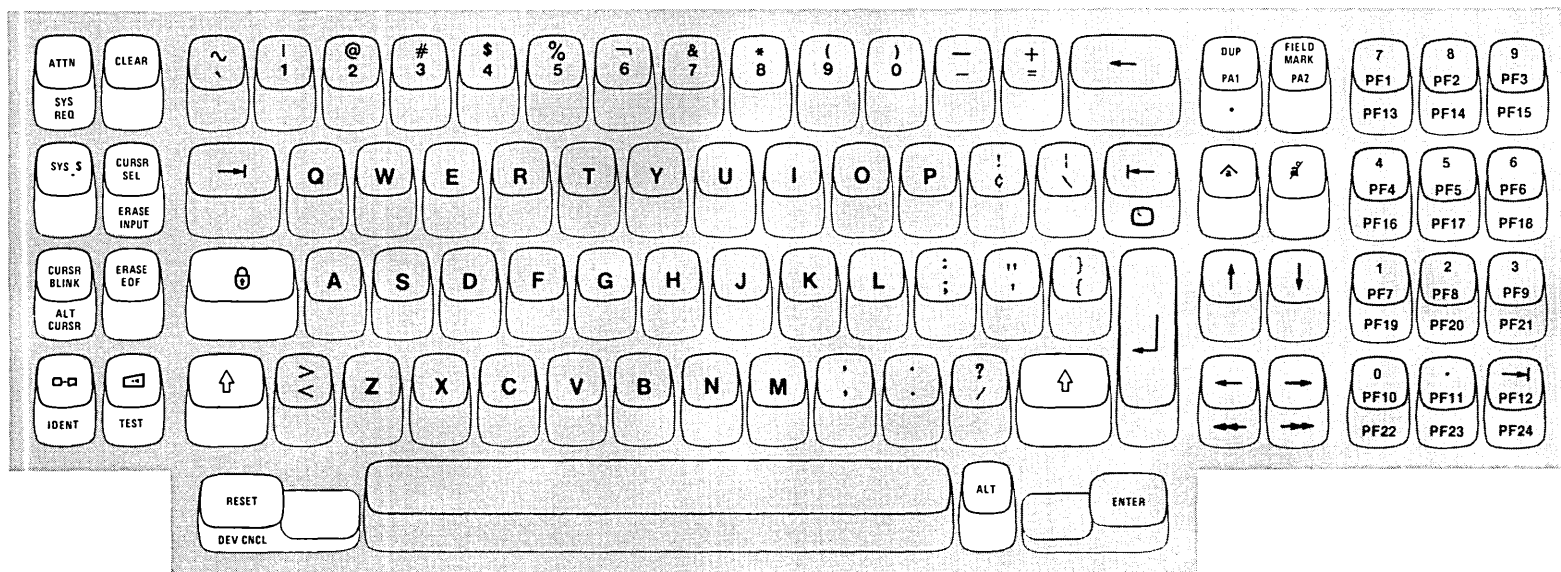
Typewriter Overlay Keyboard

Figure 3-33 (Part 1 of 2). Typewriter Overlay Keyboard (English [U.S.]) for 3276, 3278, and 3279 Display Stations



Overlay Mask Location for Typewriter Overlay Keyboard

Figure 3-33 (Part 2 of 2). Typewriter Overlay Keyboard (English [U.S.]) for 3276, 3278, and 3279 Display Stations



LEGEND:

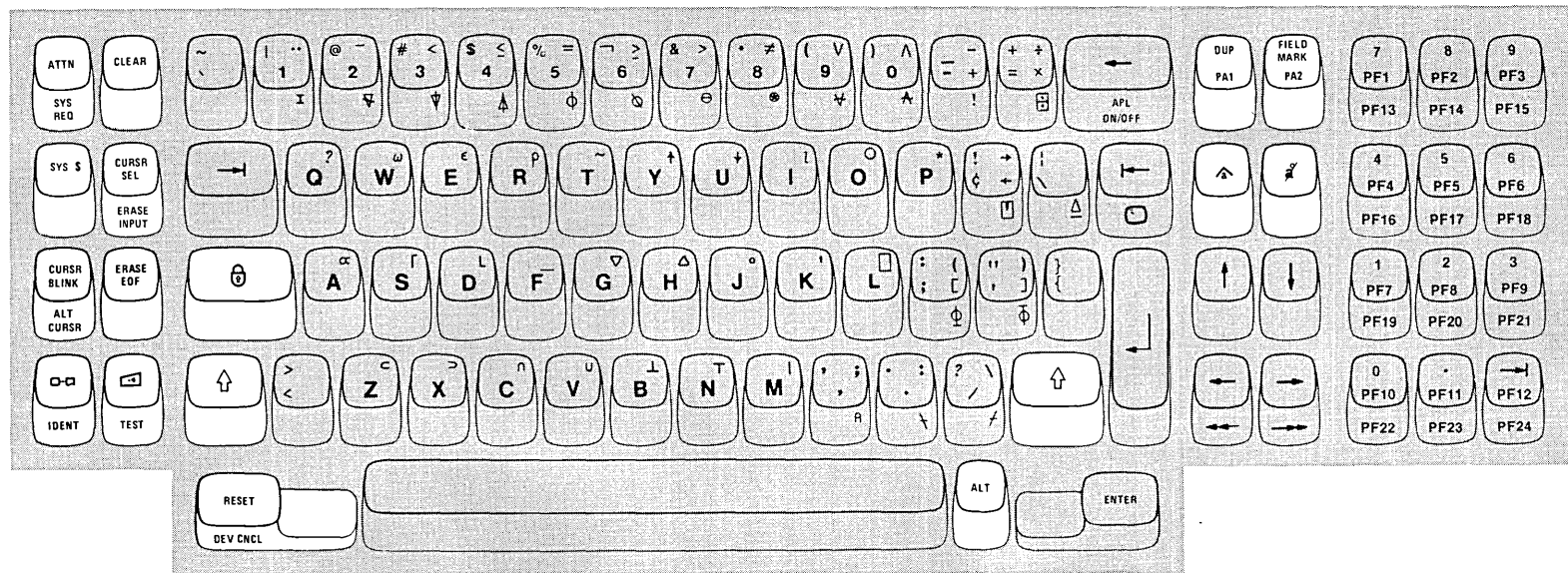
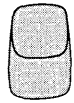


Typematic
Keys



Nontypematic
Keys

Figure 3-34. Model 038 Typewriter Keyboard (Not Supported by 3274 and 3276)

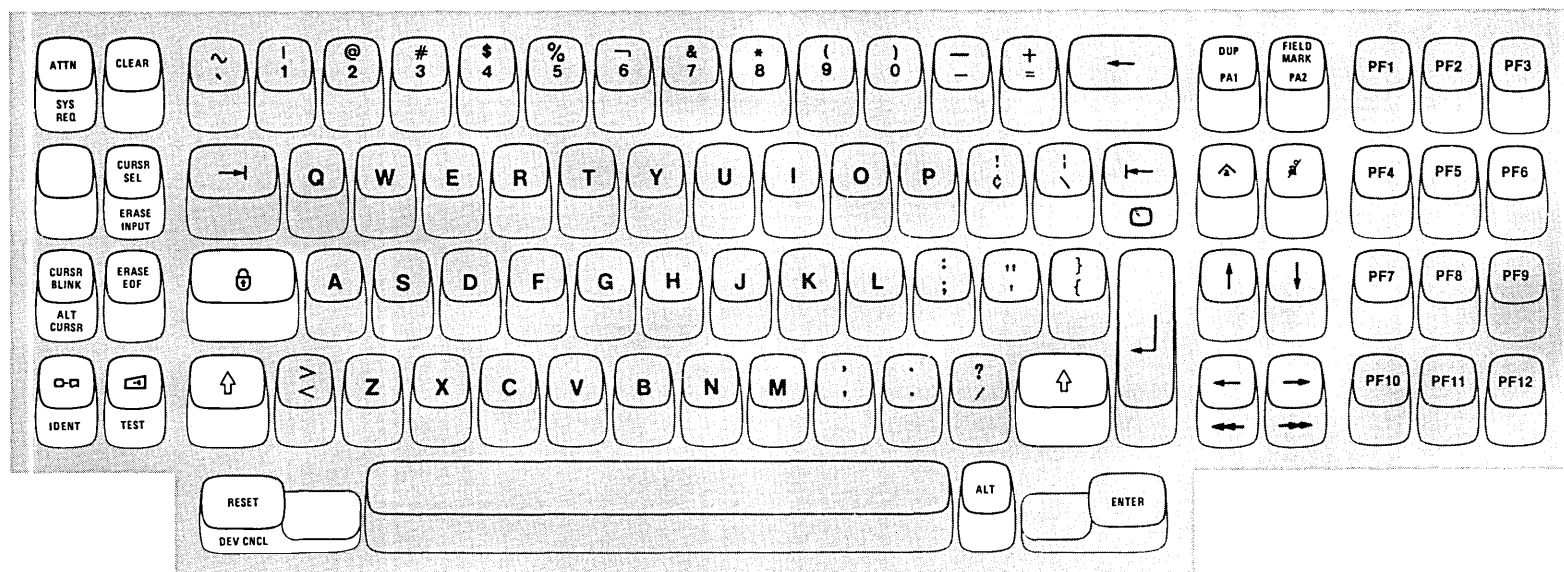
**LEGEND:**

Typematic
Keys



Nontypematic
Keys

Figure 3-35. Model 158 Typewriter/APL Keyboard (Not Supported by 3274 and 3276)



LEGEND:

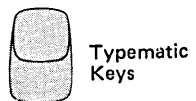
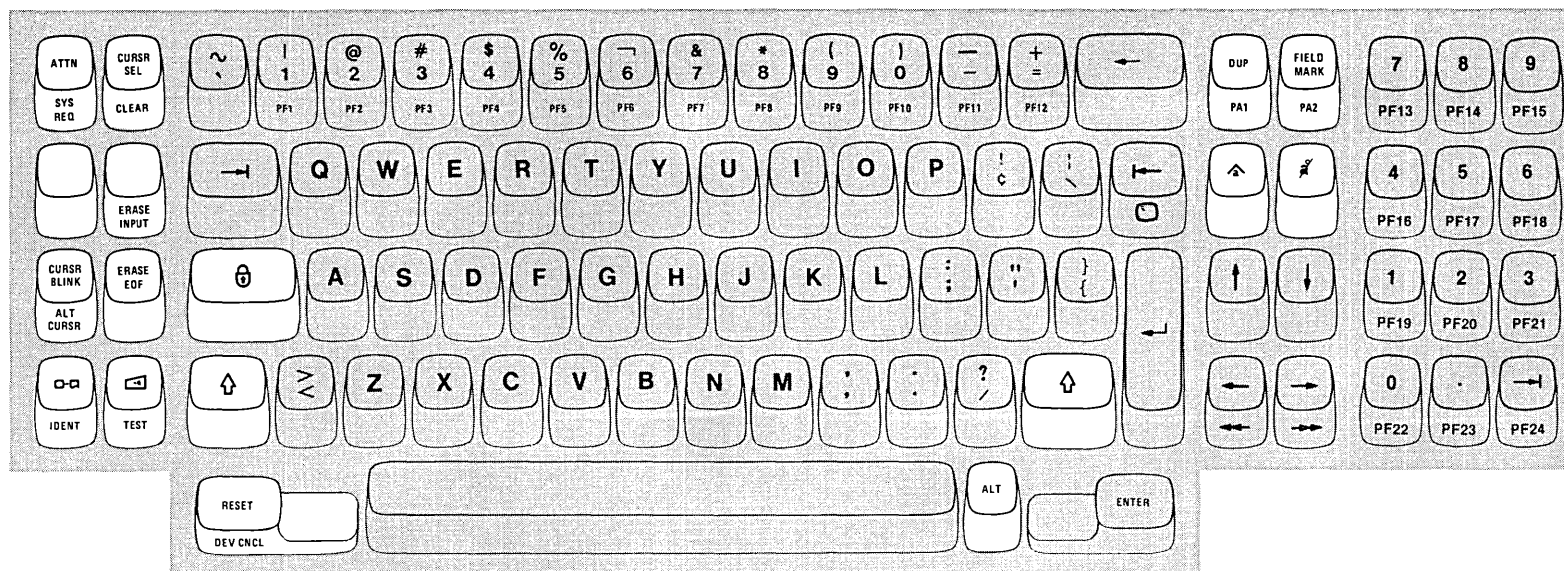
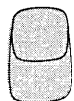


Figure 3-36. Model 808 Typewriter Keyboard (Not Supported by 3274 and 3276)

**LEGEND:**

Typematic
Keys



Nontypematic
Keys

Figure 3-37. Model 932 Typewriter Keyboard (Not Supported by 3274 and 3276).

Chapter 4. 3178 Display Station Keyboards

This chapter provides definitions and layouts for the 3178 Display Station keyboards.

Keyboard Definitions

The IBM 3178 Display Station is available in four models: C1, C2, C3, and C4. Model C1 has a 75-key Data Entry keyboard. Model C2 has an 87-key Typewriter keyboard. One key is added for the Katakana versions of Models C1 and C2. Model C3 (available in U.S. English only) is a Typewriter keyboard similar to Model C2, redesigned with a numeric keypad that has the function keys positioned on it. Model C4 (available in U.S. English only) is similar to Model C3, except for the placement of some functions on the keyboard.

The keyboards are:

Model C1 75-Key Data Entry Keyboard: This keyboard has 34 data keys, 10 program function keys, and 31 control keys. The Japanese Katakana Data Entry keyboard has one additional control key, resulting in a 76-key keyboard. The 10 standard program function keys are arranged around the alphabetic keys. The function of each program function key is determined by the application program.

Model C2 87-Key Typewriter Keyboard: This keyboard has 48 data keys, 27 control keys, and 12 standard program function keys (PF1–12) in the top row of the keyboard. The Japanese Katakana Typewriter keyboard contains one additional control key, resulting in an 88-key keyboard. An additional group of 12 program function keys (PF13–24) is located on the right side of the keyboard. The user may define the 12 additional program function keys to fit the requirements of an application program.

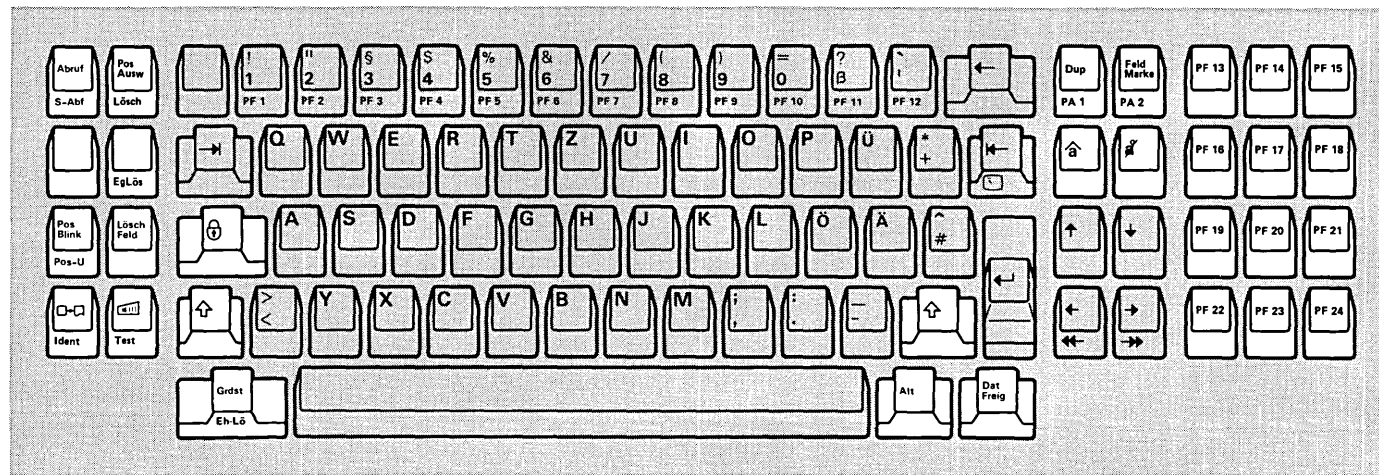
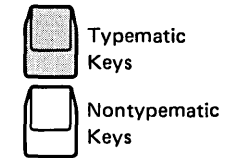
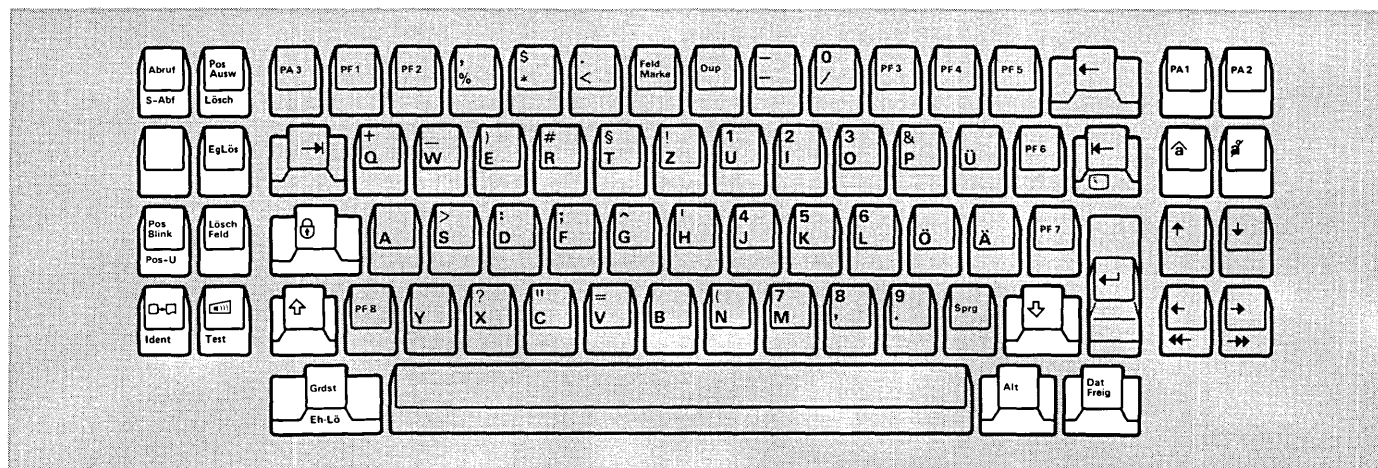
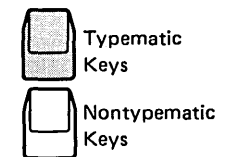
Model C3 87-Key Typewriter Keyboard: This keyboard has 48 data keys, 27 control keys, and a 12-key numeric pad that also houses the 24 program function keys. This keyboard is available in U.S. English only. An SYS \$ key, useful for JES2 programmers, is added to the control keys on the left. The user can activate the Clear key without pressing the Alt key first.

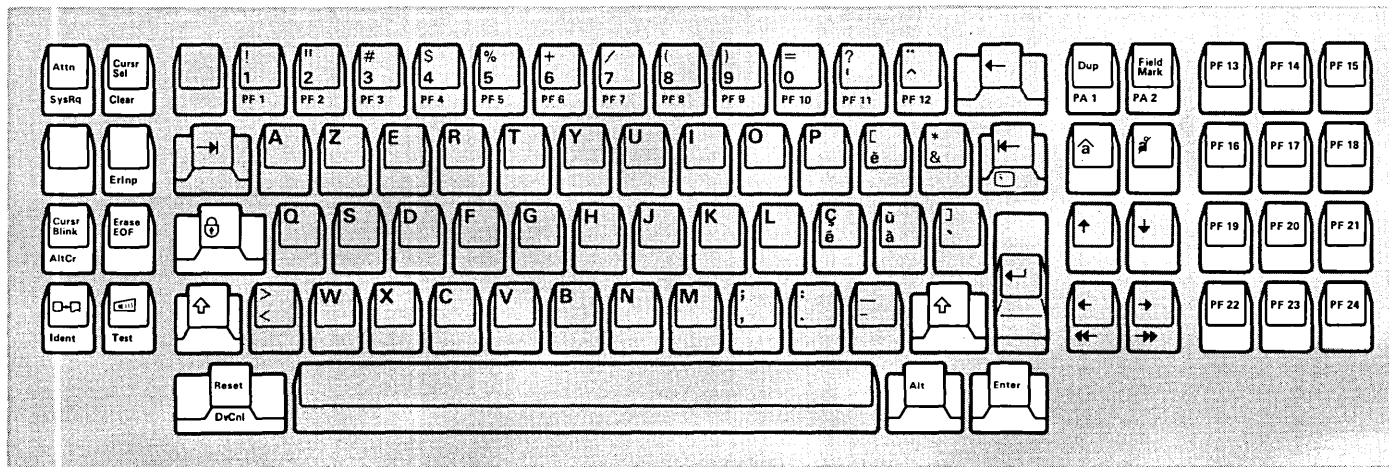
In uppercase mode, the numeric keys on the keypad print 0 through 9, plus decimal and tab, in adding-machine format. In lowercase mode, the numeric keys function as program function keys 1–12. When the Alt key is pressed first and then the numeric key, program function keys 13–24 can be activated.

Model C4 87-Key Typewriter Keyboard: This keyboard has 48 data keys, 27 control keys, and a 12-key numeric pad that also contains the 24 program function keys. This keyboard is available in U.S. English only. A decimal key and a tab forward key are part of the numeric keys on the keypad. Numeric keys are active in either uppercase or lowercase mode. When used with the Alt shift key, program function keys 13–24 can be activated.

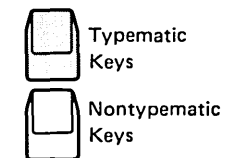
Keyboard Layouts

Figures 4-1 through 4-18 illustrate the 3178 keyboard layouts for the various national languages.

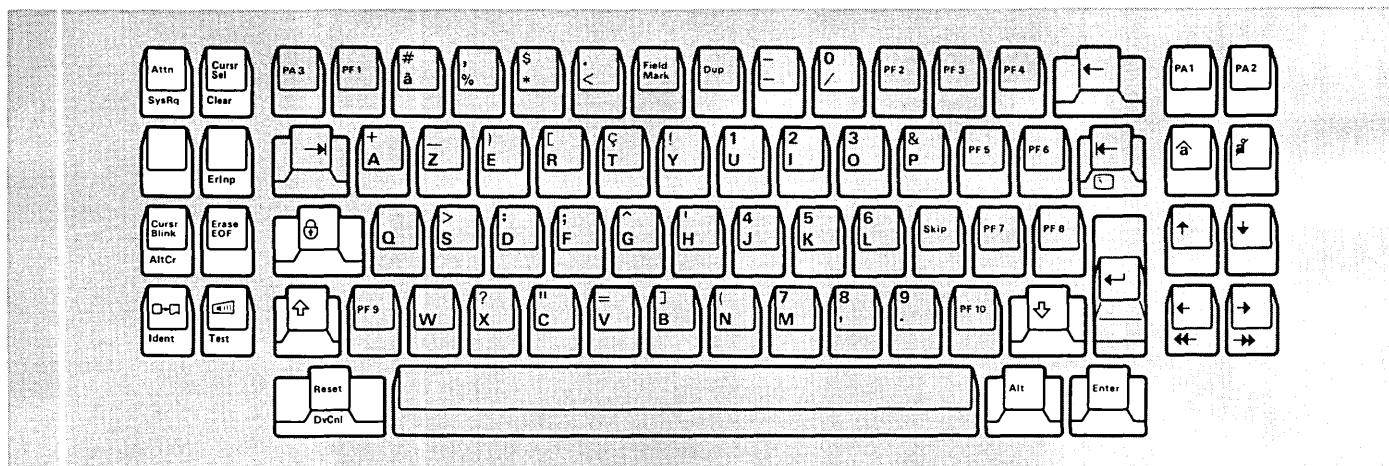
**LEGEND:****Typewriter Keyboard****LEGEND:****Data Entry Keyboard****Figure 4-1. Austrian/German Keyboards for 3178 Display Station**



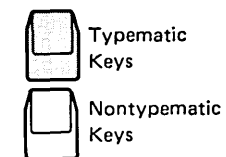
LEGEND:



Typewriter Keyboard

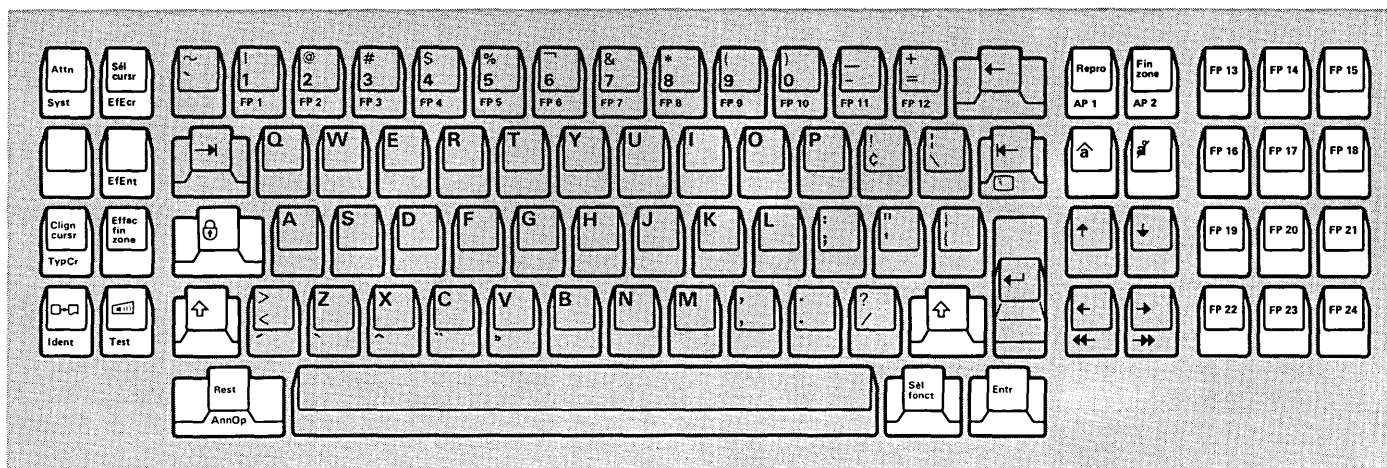


LEGEND:

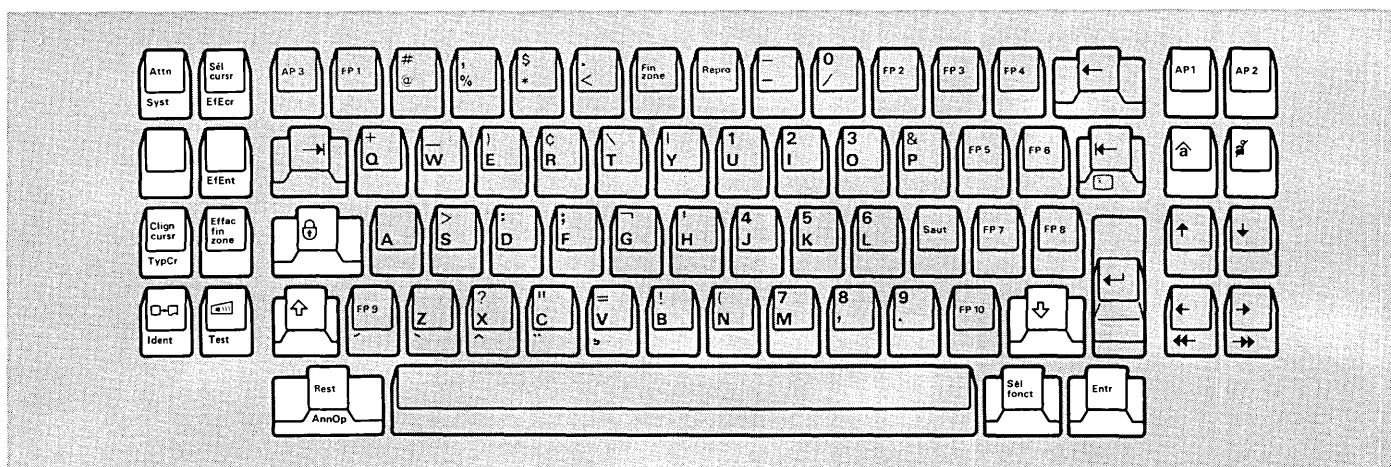


Data Entry Keyboard

Figure 4-2. Belgian Keyboards for 3178 Display Station

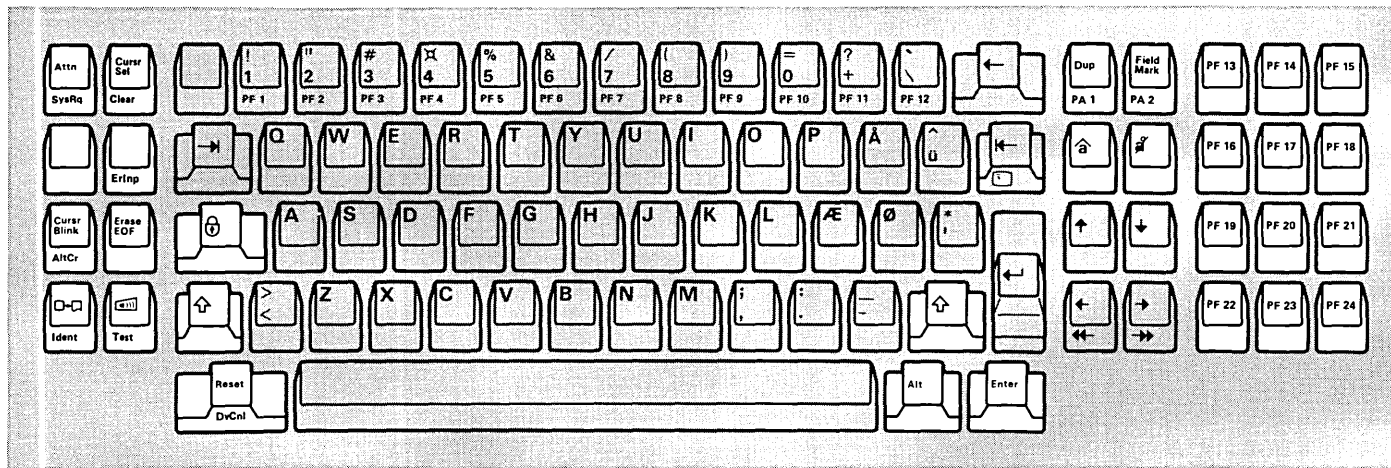


Typewriter Keyboard

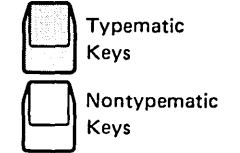


Data Entry Keyboard

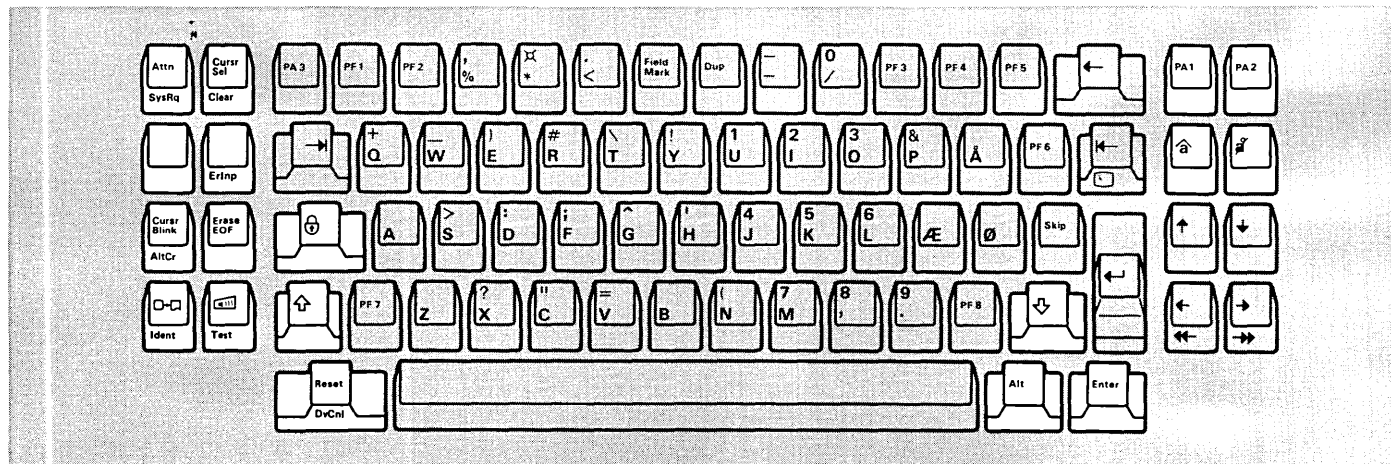
Figure 4-3. Canadian-French Bilingual Keyboards for 3178 Display Station



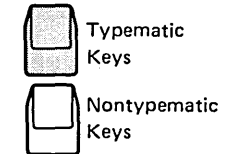
LEGEND:



Typewriter Keyboard

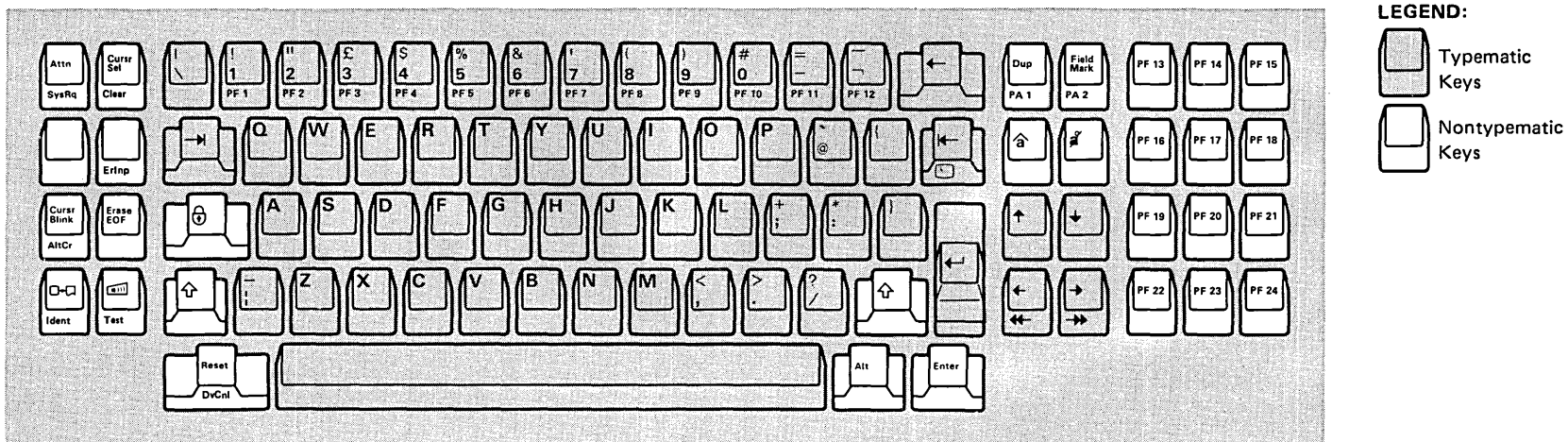


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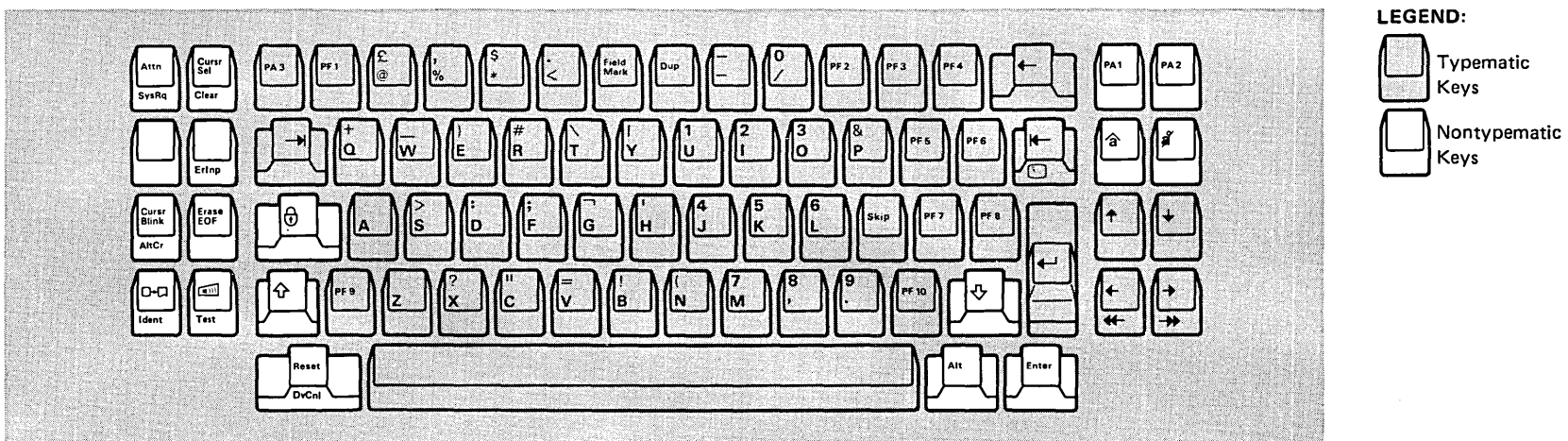


Data Entry Keyboard

Figure 4-4. Danish Keyboards for 3178 Display Station

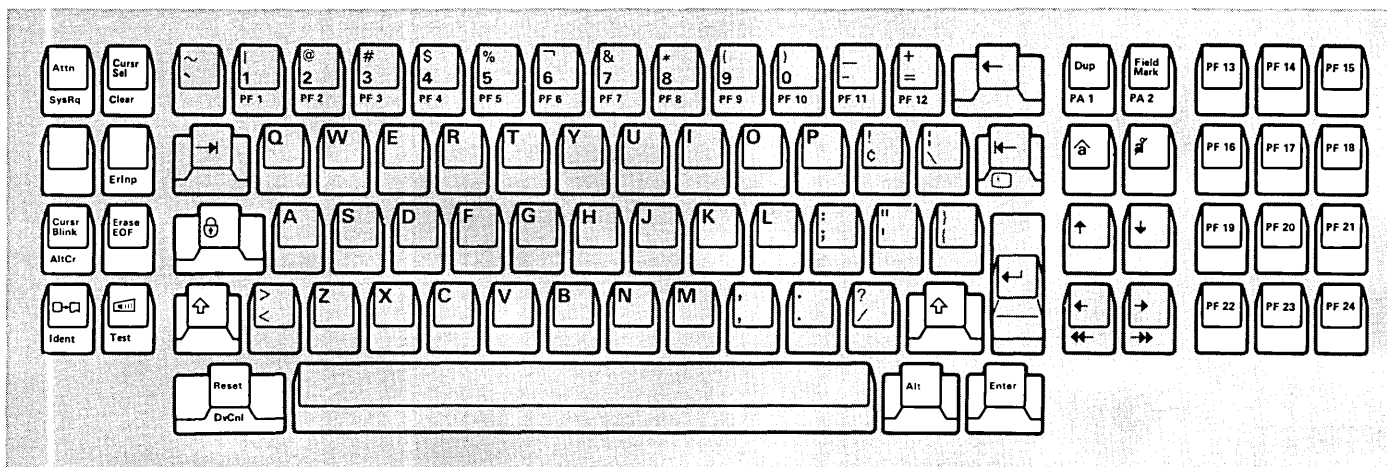


Typewriter Keyboard

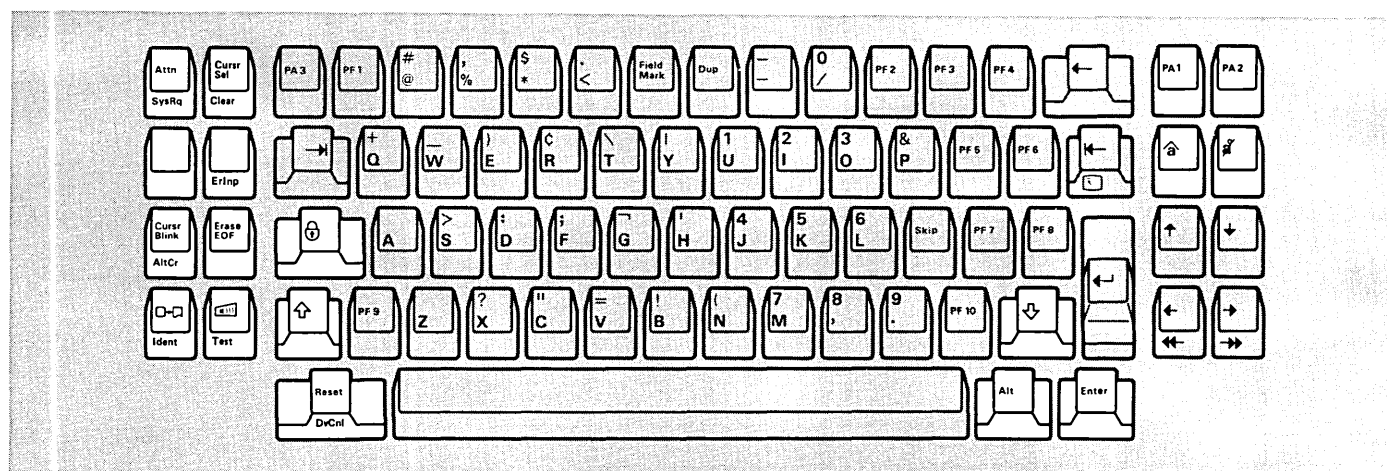


Data Entry Keyboard

Figure 4-5. English (U.K.) Keyboards for 3178 Display Station



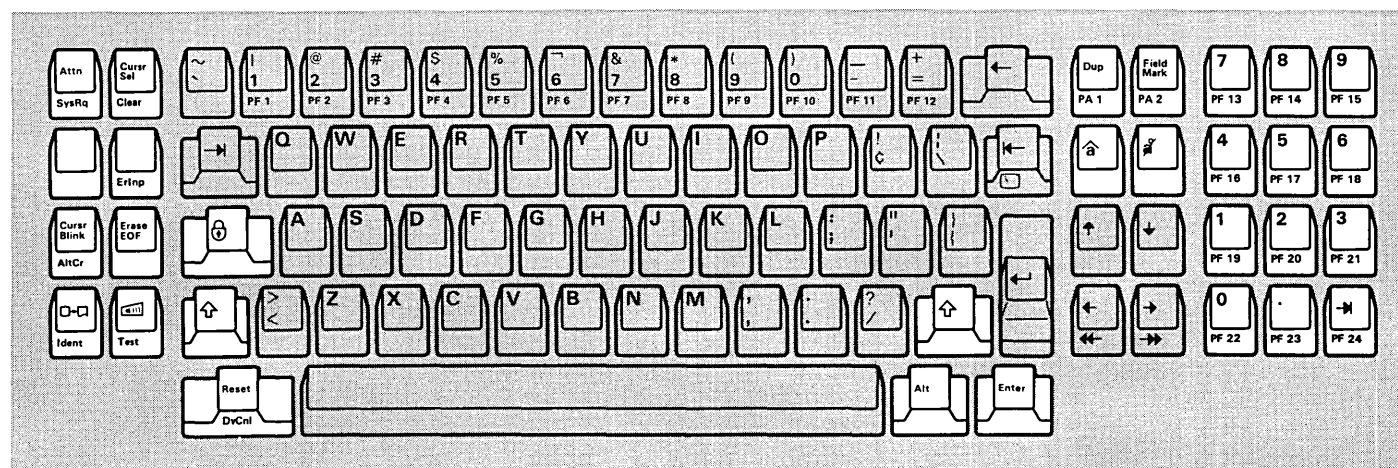
Typewriter Keyboard



Data Entry Keyboard

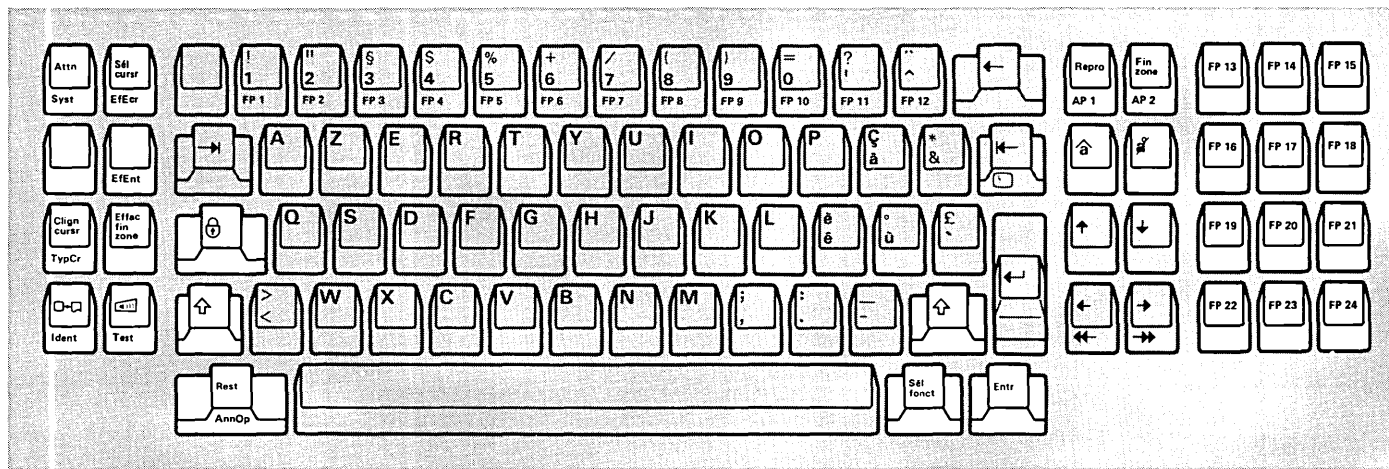
Figure 4-6 (Part 1 of 2). English (U.S.) Keyboards for 3178 Display Station

Typewriter Keyboard with Numeric Keypad (Model C3)

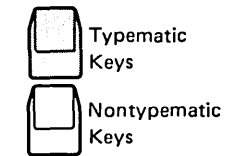


Typewriter Keyboard with Numeric Keypad (Model C4)

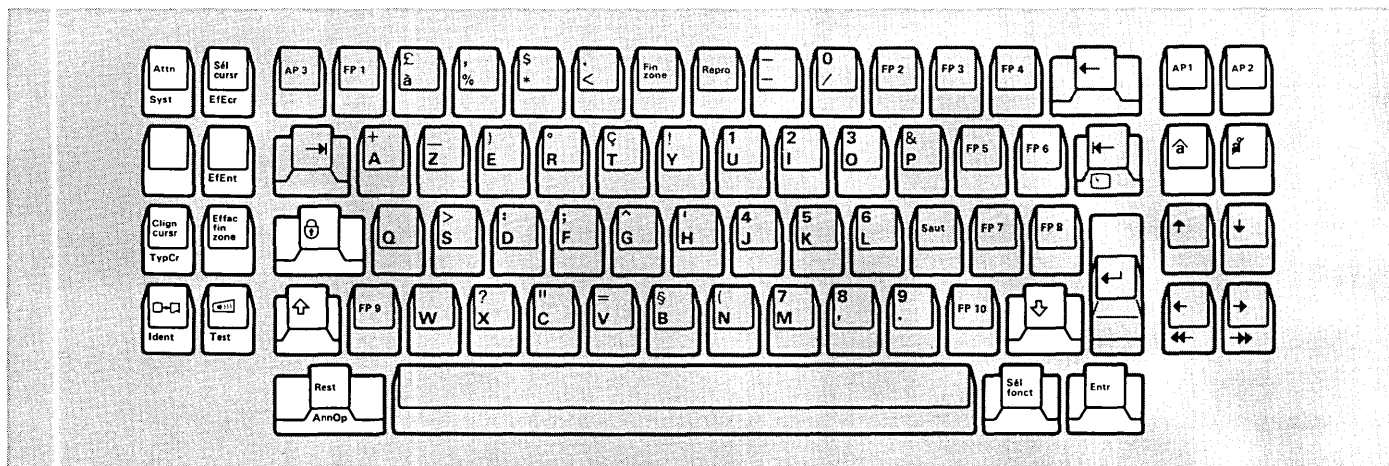
Figure 4-6 (Part 2 of 2). English (U.S.) Keyboards for 3178 Display Station



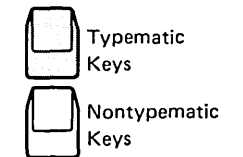
LEGEND:



Typewriter Keyboard

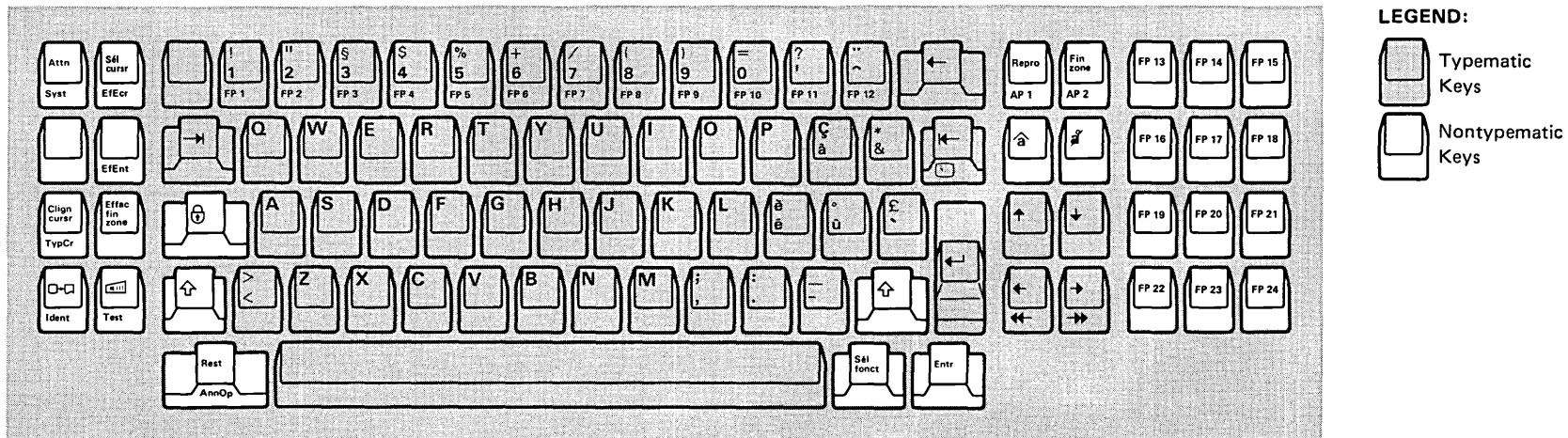


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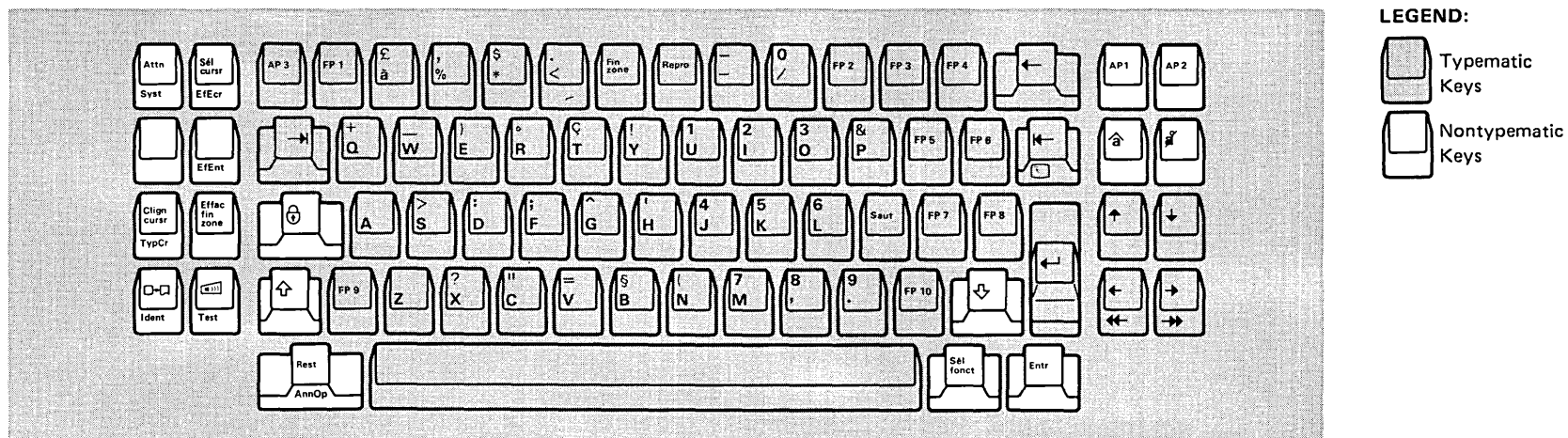


Data Entry Keyboard

Figure 4-7. French (AZERTY) Keyboards for 3178 Display Station

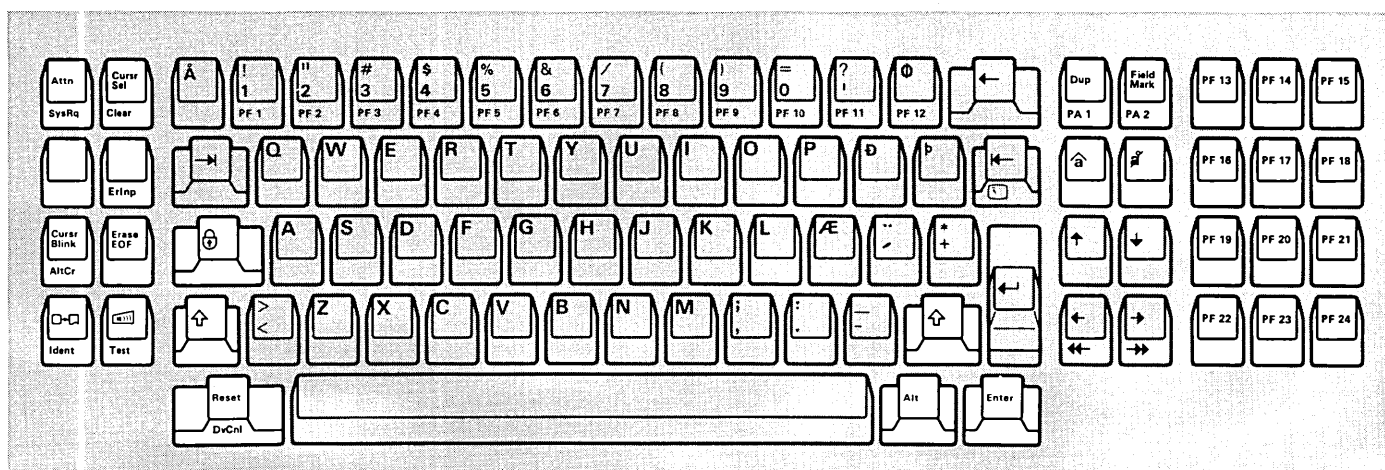


Typewriter Keyboard



Data Entry Keyboard

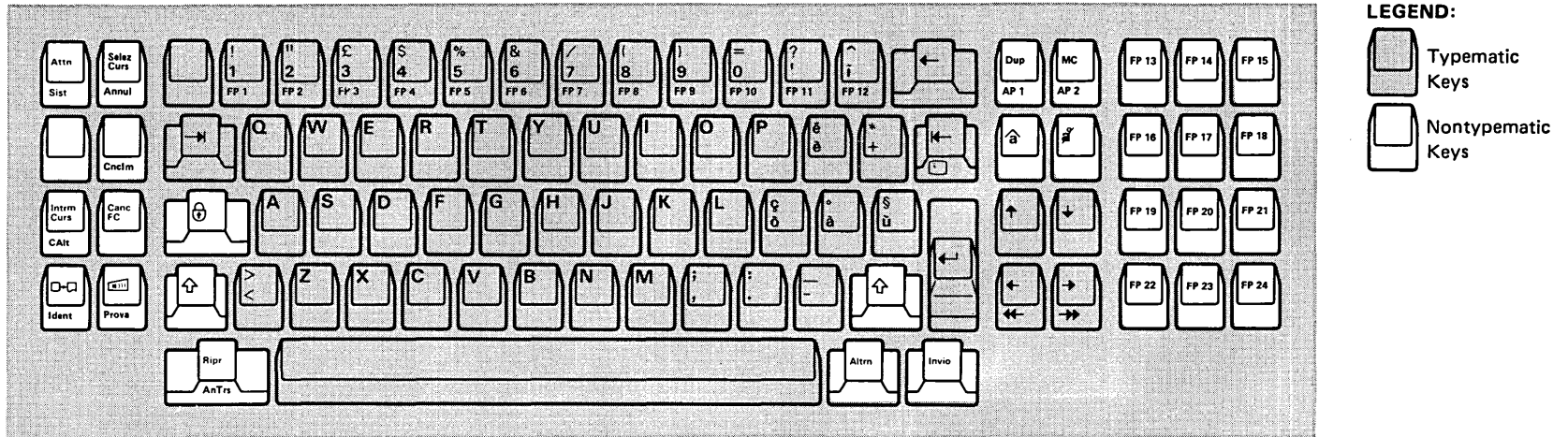
Figure 4-8. French (QWERTY) Keyboards for 3178 Display Station



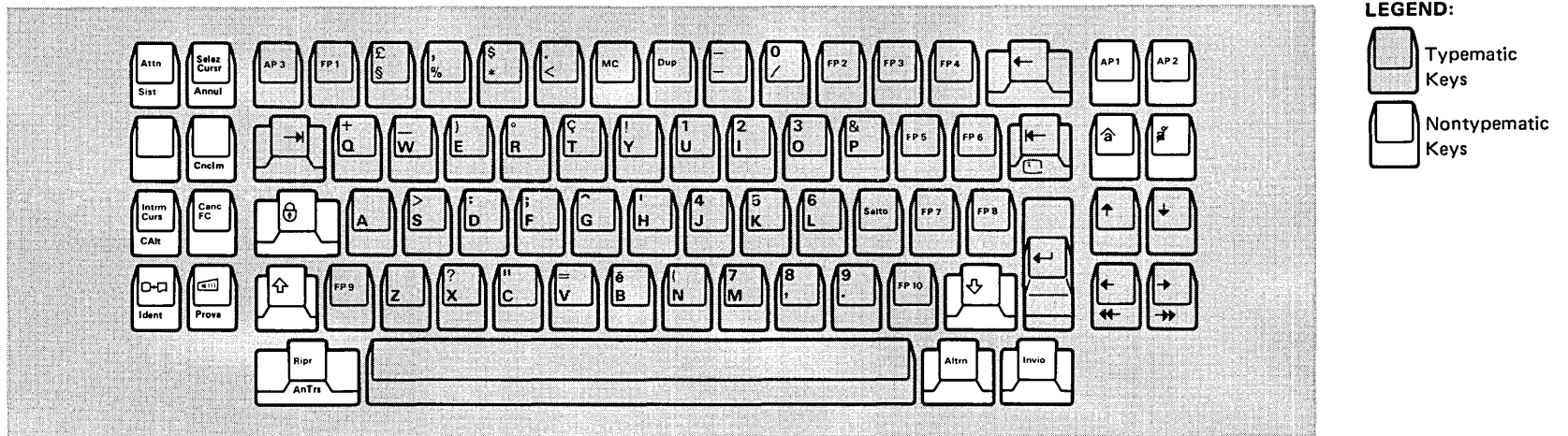
Typewriter Keyboard

Note: The Icelandic keyboard is a 3178 Display Station RPQ item.

Figure 4-9. Icelandic Keyboard for 3178 Display Station (Not Supported by 3274 and 3276)

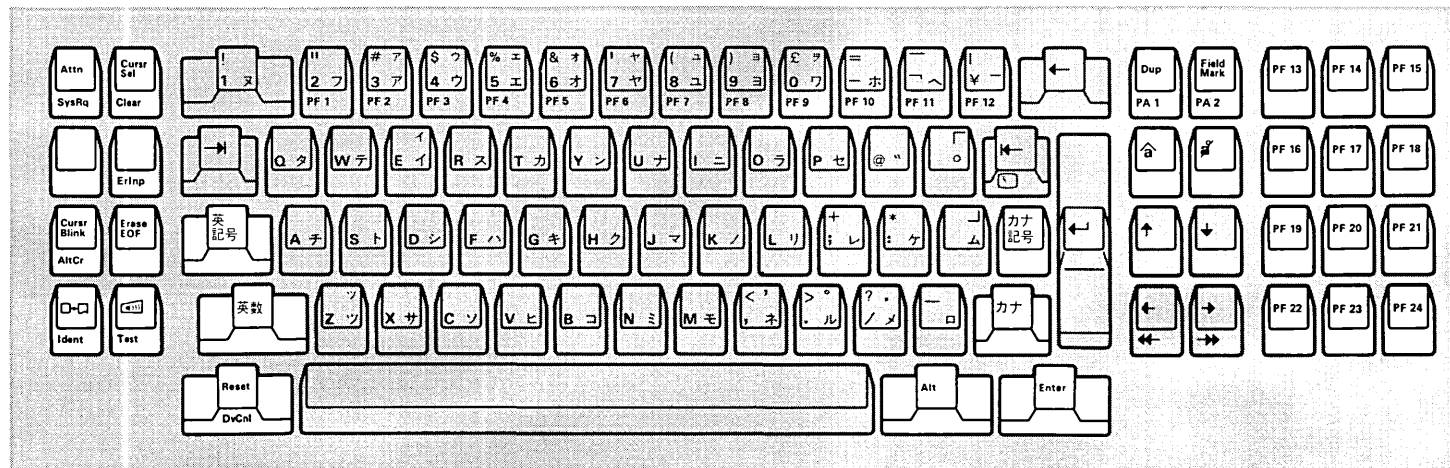


Typewriter Keyboard

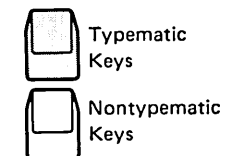


Data Entry Keyboard

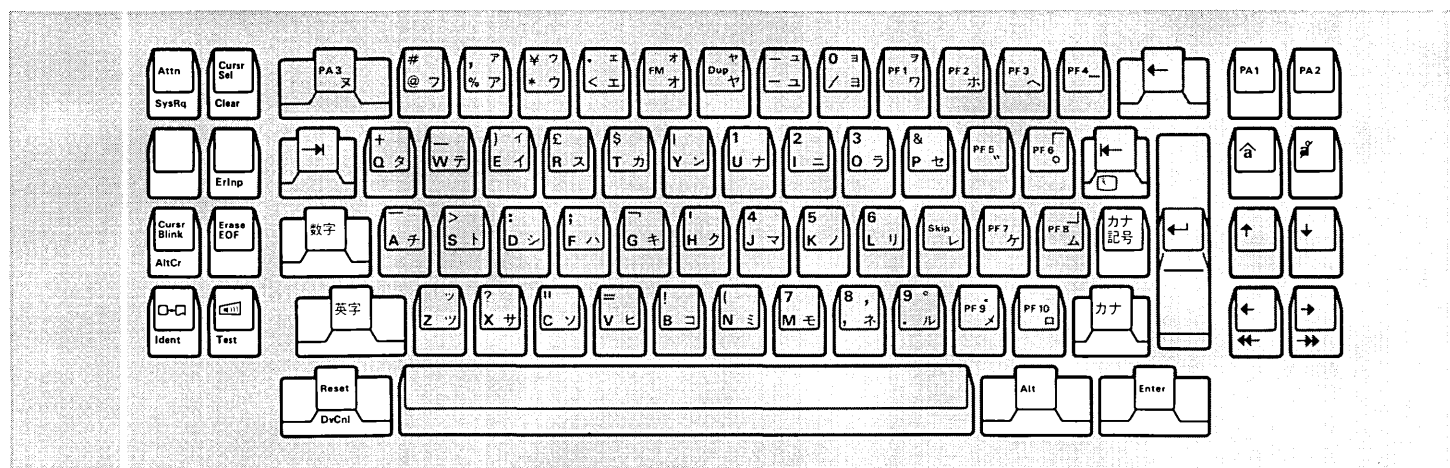
Figure 4-10. Italian Keyboards for 3178 Display Station



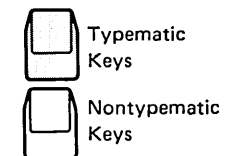
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Typewriter Keyboard

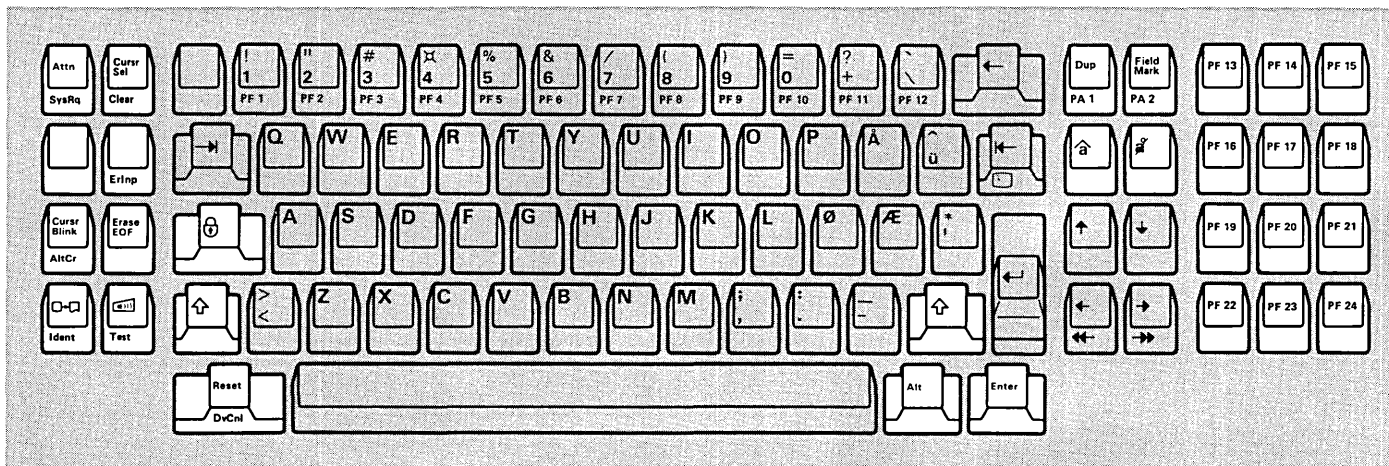


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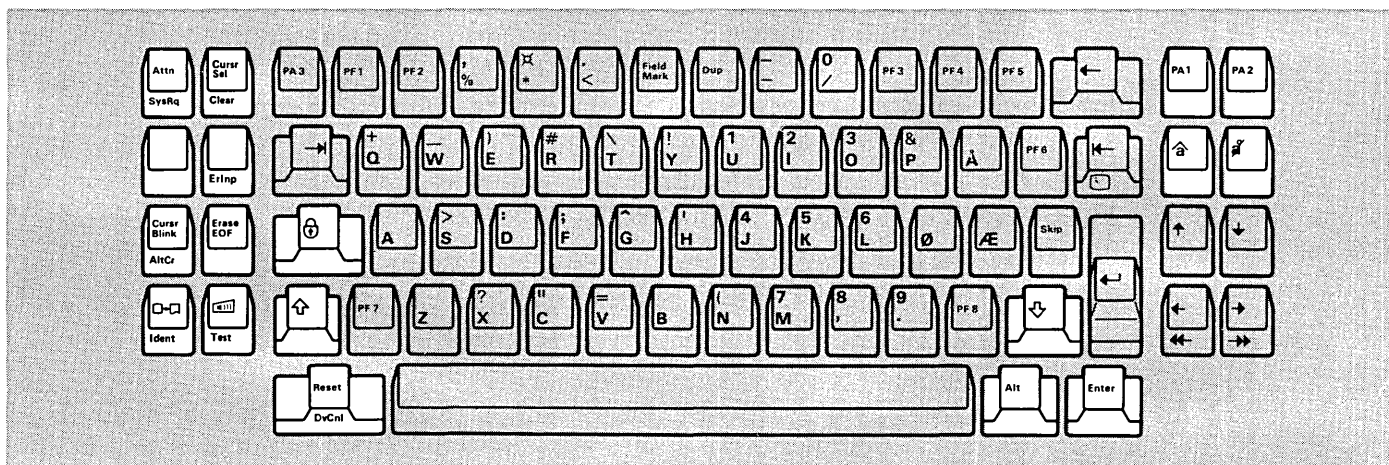


Data Entry Keyboard

Figure 4-11. Japanese Katakana Keyboards for 3178 Display Station

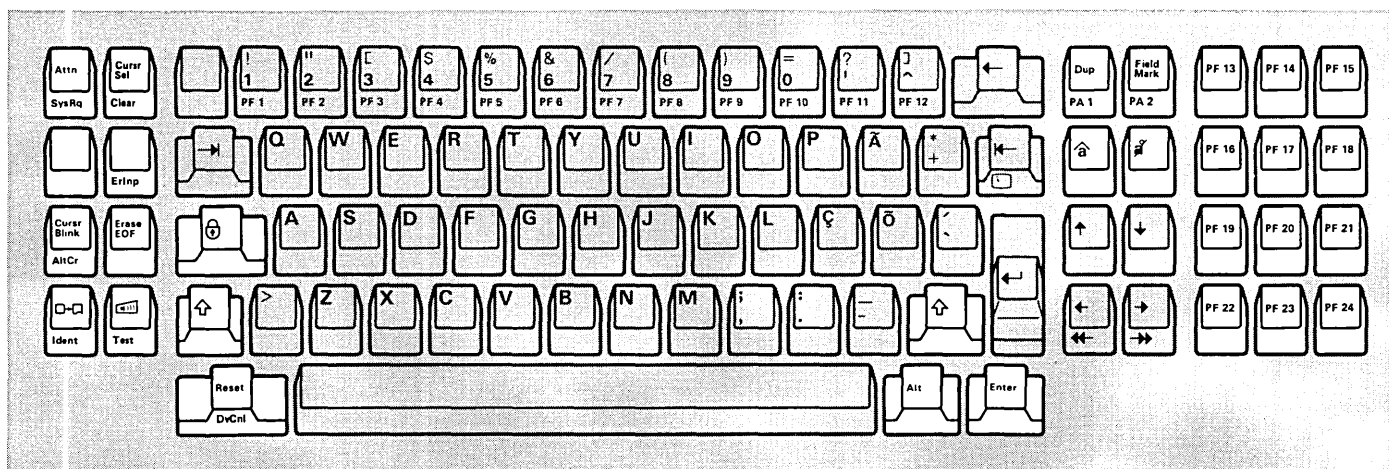


Typewriter Keyboard

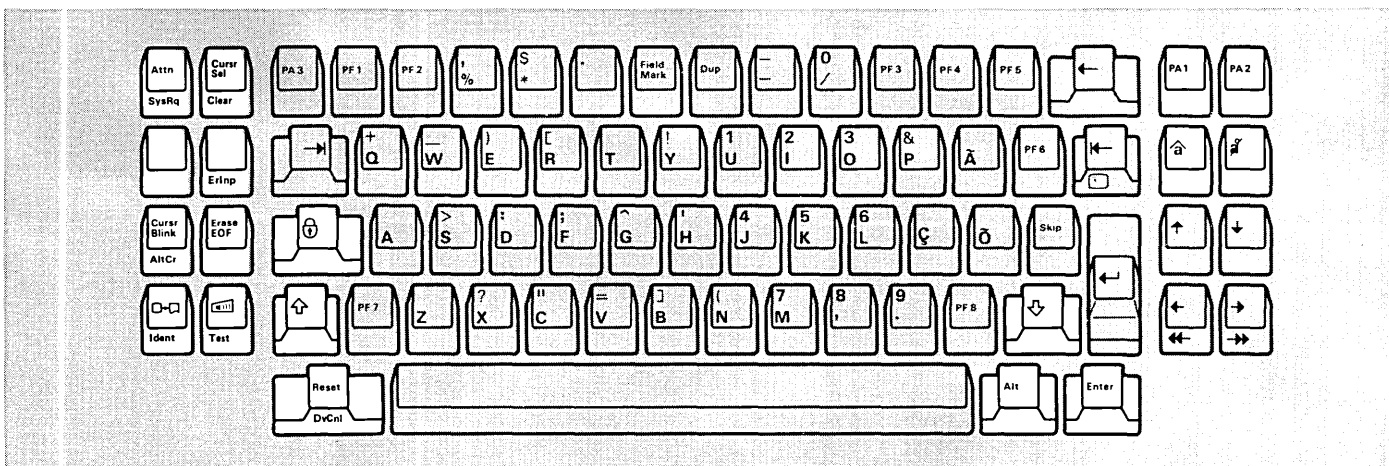


Data Entry Keyboard

Figure 4-12. Norwegian Keyboards for 3178 Display Station

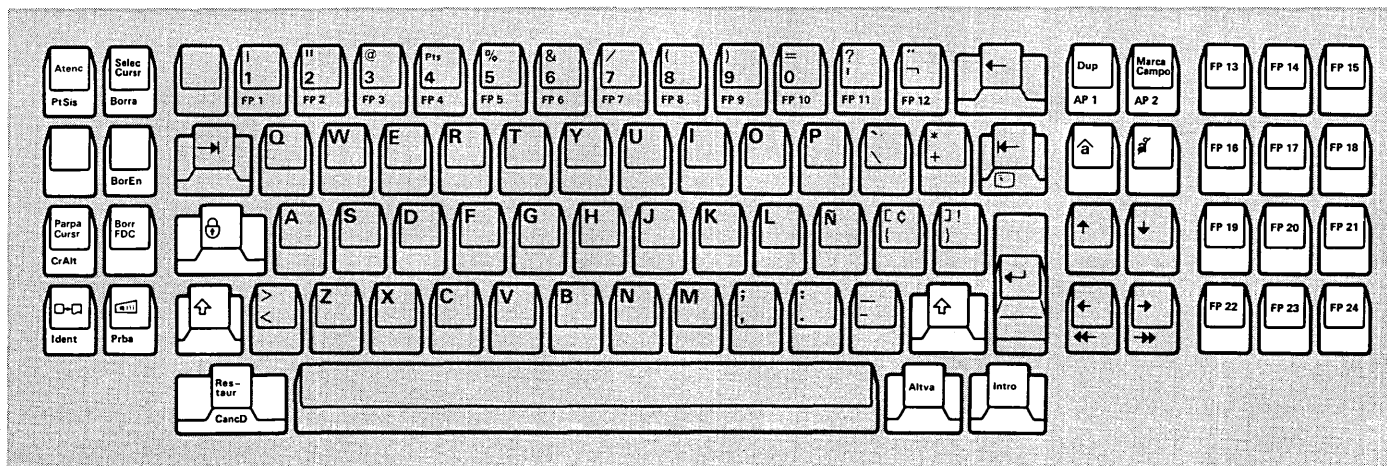
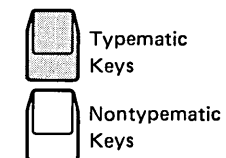
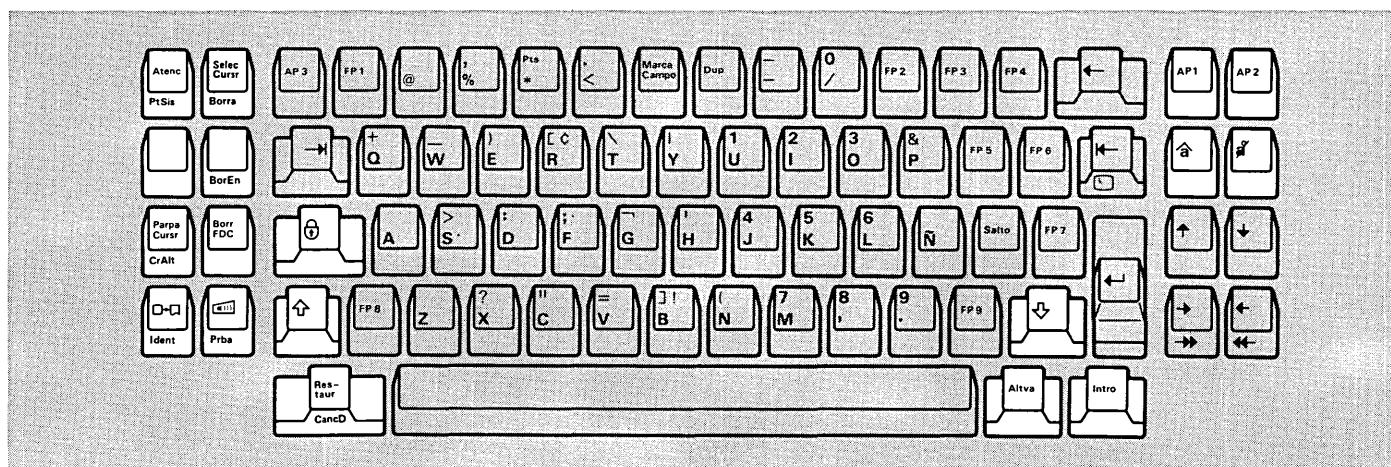
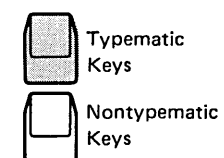


Typewriter Keyboard



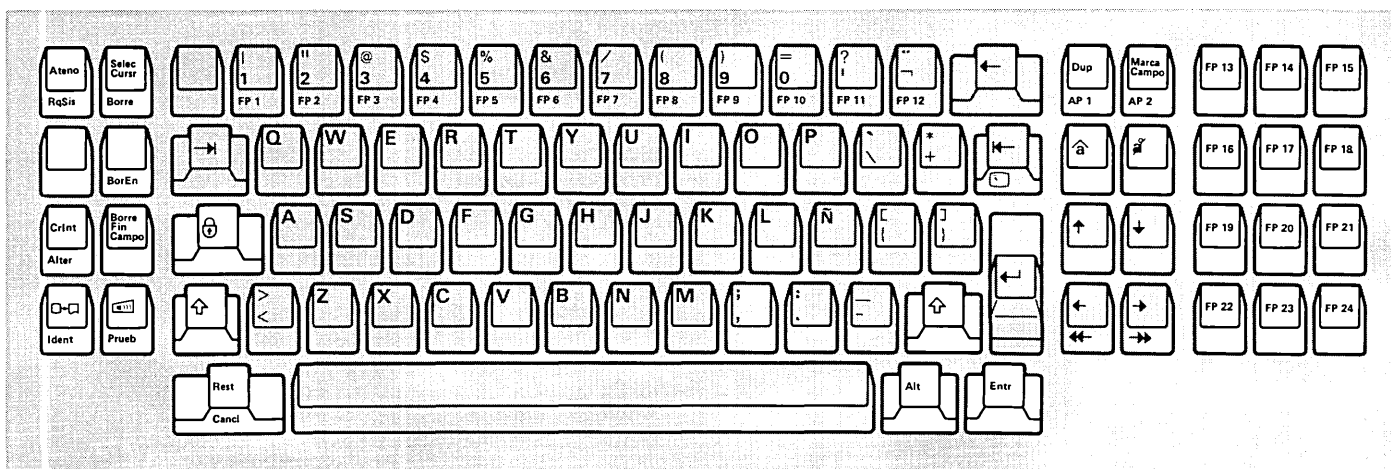
Data Entry Keyboard

Figure 4-13. Portuguese Keyboards for 3178 Display Station

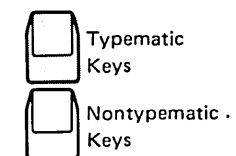
**LEGEND:****Typewriter Keyboard****LEGEND:****Data Entry Keyboard**

Note: *Pts* is replaced by \$ symbol.

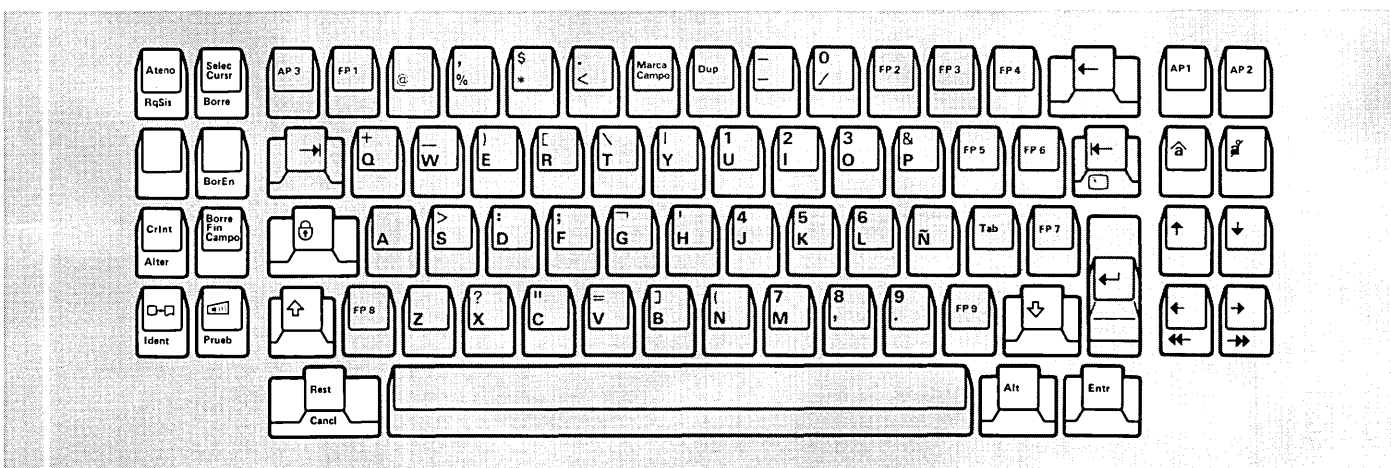
Figure 4-14. Spanish Keyboards for 3178 Display Station



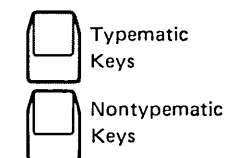
LEGEND:



Typewriter Keyboard

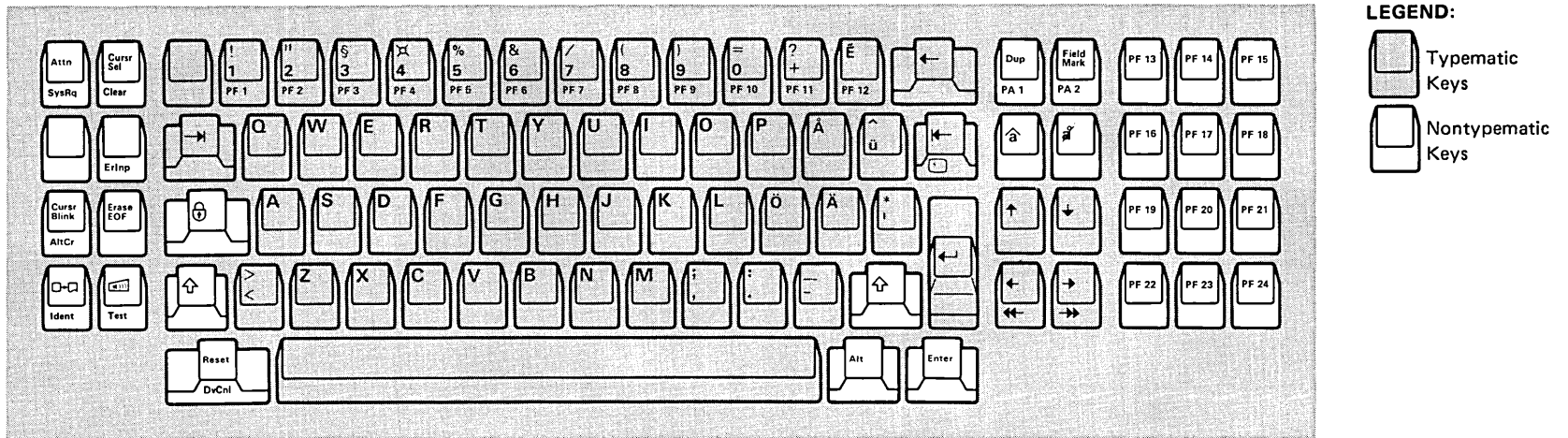


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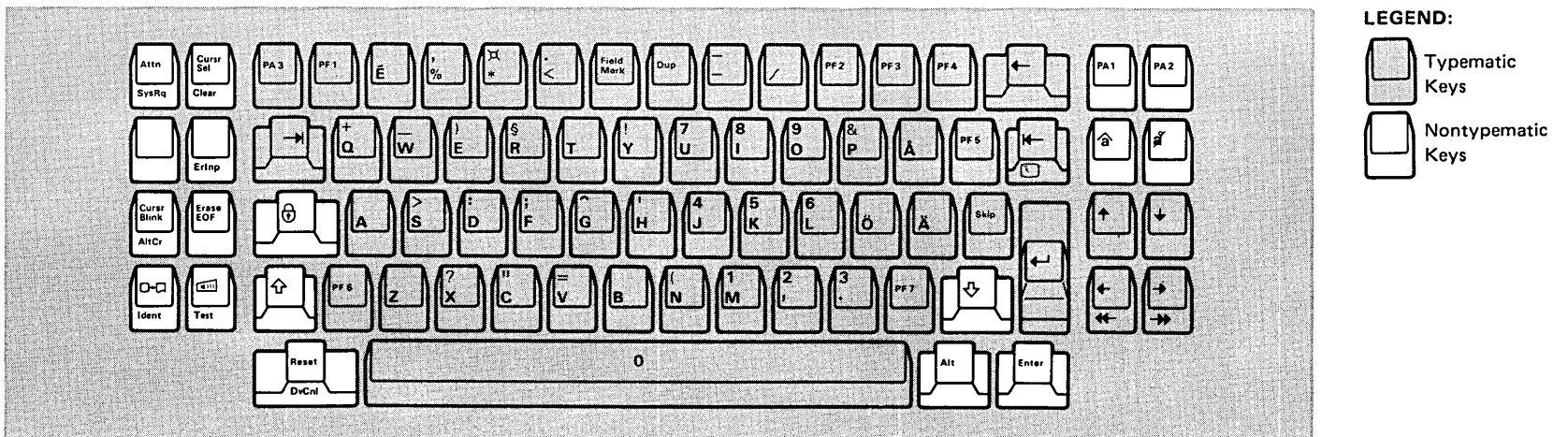


Data Entry Keyboard

Figure 4-15. Spanish-Speaking Keyboards for 3178 Display Station

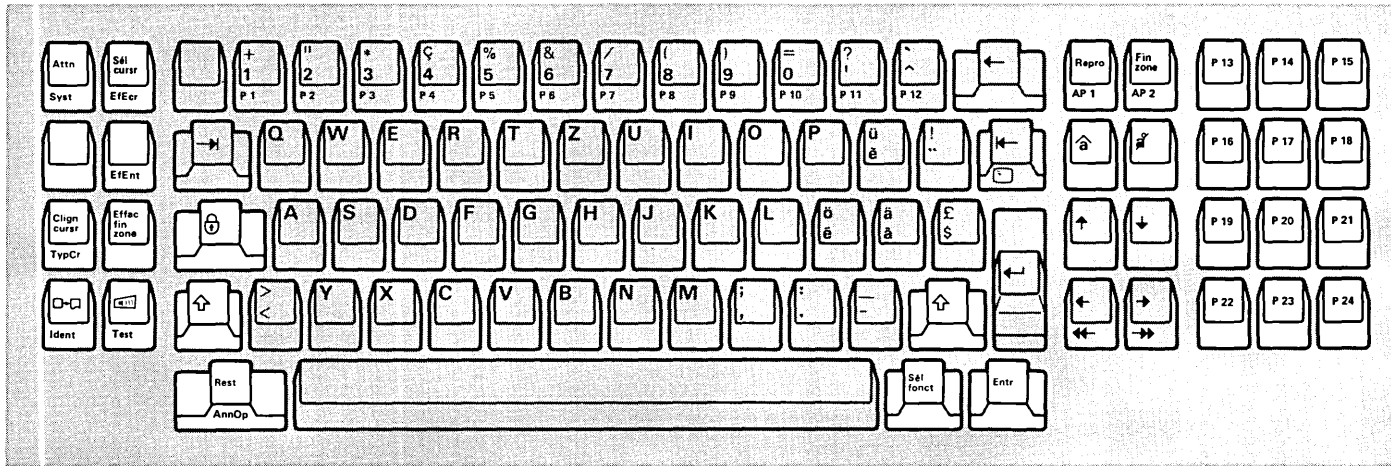


Typewriter Keyboard

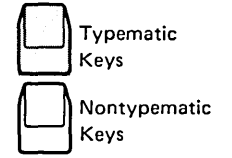


Data Entry Keyboard

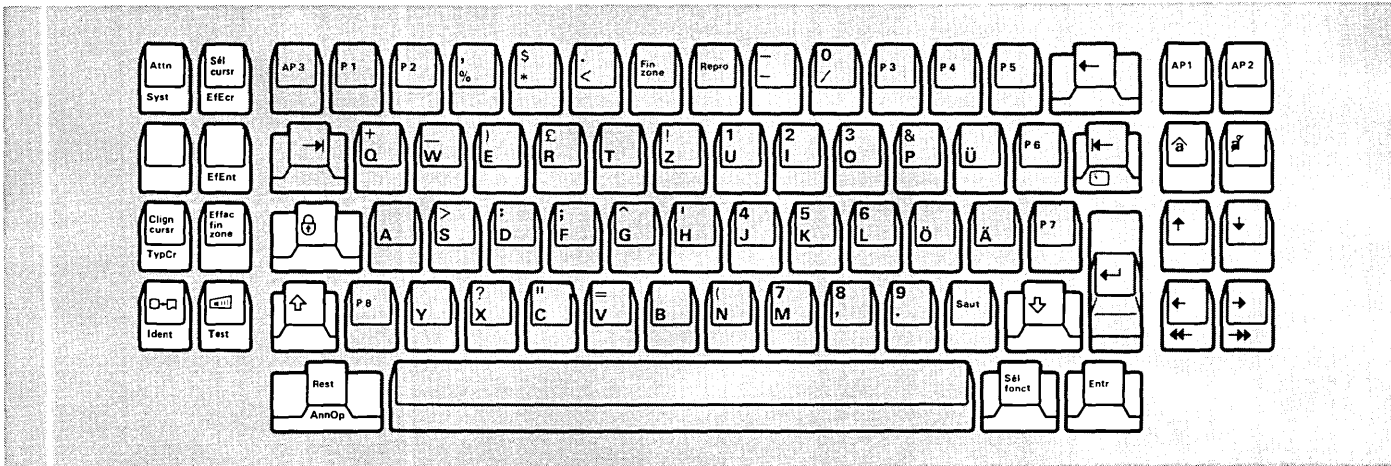
Figure 4-16. Swedish Keyboards for 3178 Display Station



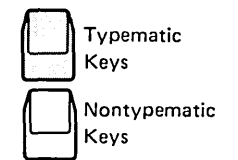
LEGEND:



Typewriter Keyboard

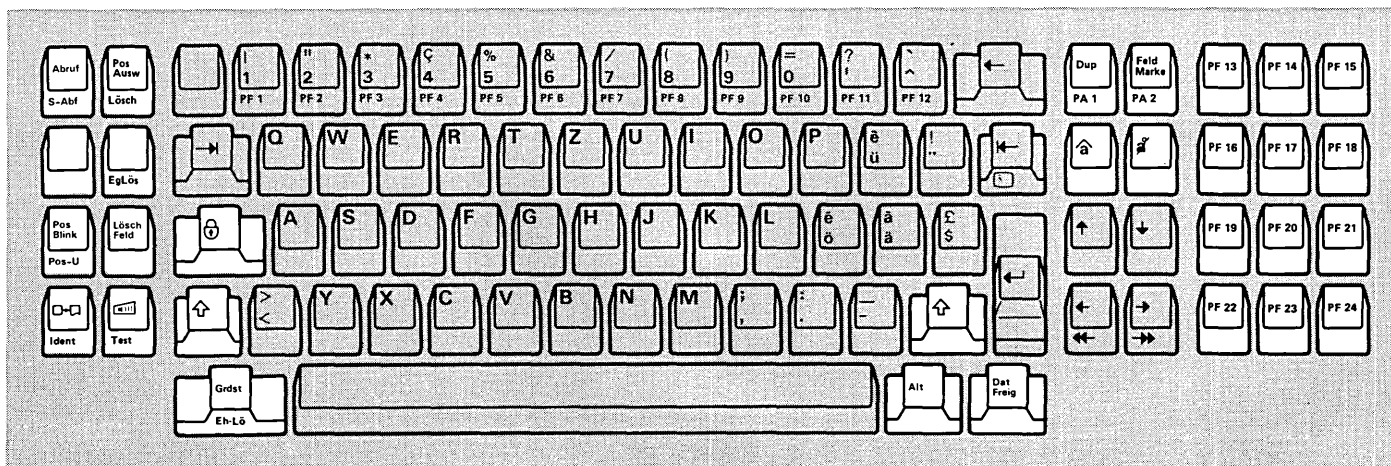


LEGEND:

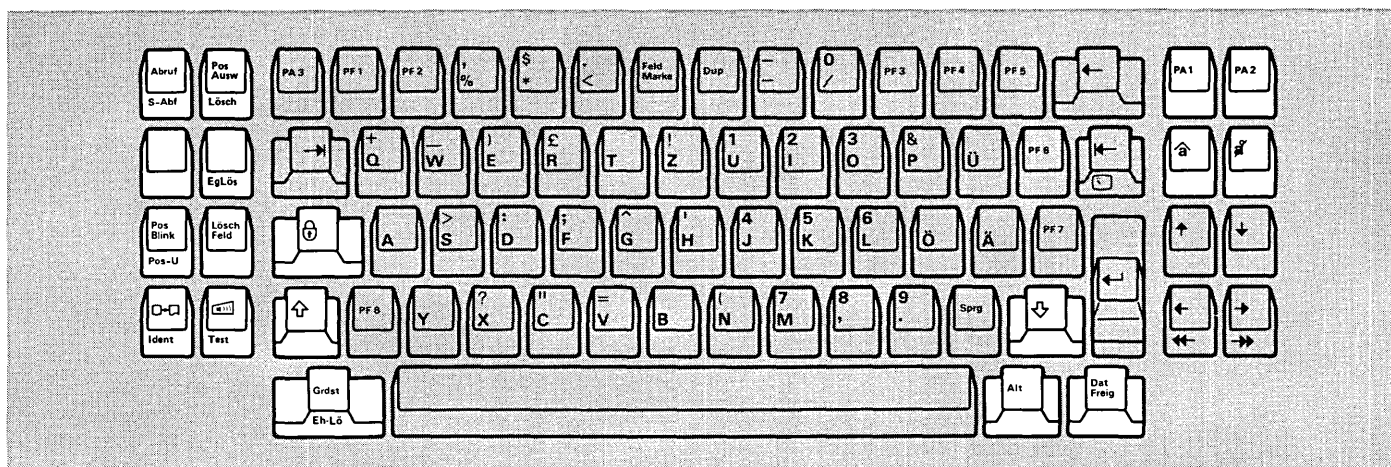


Data Entry Keyboard

Figure 4-17. Swiss-French Keyboards for 3178 Display Station



Typewriter Keyboard



Data Entry Keyboard

Figure 4-18. Swiss-German Keyboards for 3178 Display Station

Chapter 5. 3179 Color Display Station Keyboards

This chapter provides definitions and layouts for the 3179 Color Display Station keyboards.

Keyboard Definitions

Two modifiable keyboards are available for the 3179 Color Display Station:

122-Key Typewriter Keyboard: This keyboard has 49 data keys, 31 control keys, 24 program function keys at the top of the keyboard, and a numeric keypad section with 18 keys on the far right side.

124-Key Japanese Katakana Typewriter Keyboard: This keyboard, with 4-level shift, provides 50 data keys, 32 control keys, 24 program function keys at the top of the keyboard, and a numeric keypad section with 18 keys on the far right side.

Three keyboard tables with standard layouts are provided with 3274 Configuration Support D, Release Level 63 or higher, or 3174 Configuration Support A. These are Typewriter, Data Entry (U.S. English only), and APL. By modifying the keyboard tables in the control unit and moving the keycaps accordingly, the user can define four additional layouts to suit application requirements.

The 3179 can operate in two modes: emulation (Typewriter only) and native (Typewriter and Data Entry). In emulation mode, the 3179 display station Typewriter keyboard emulates the 3278 Model 2 and 3279 Model S2B display stations. The 3179's 122-key keyboard operates like an 87-key Typewriter keyboard. To operate in emulation mode, the 3179 must be attached to a 3274 Control Unit with Configuration Support A, B, C, D, T, or P at the required release level, to a 3174 Subsystem Control Unit with Configuration Support A, or to a 3276 Control Unit Display Station.

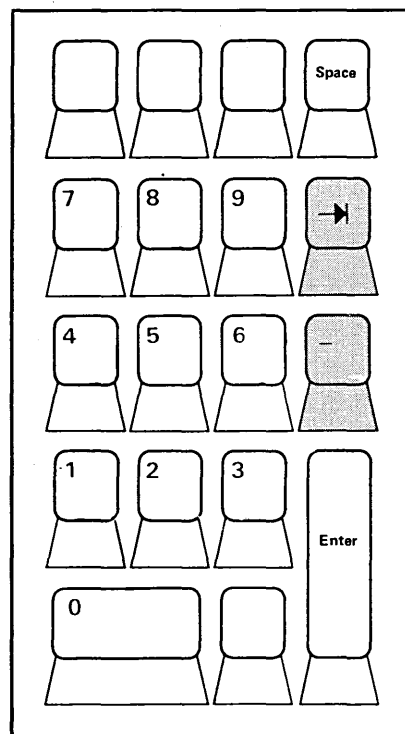
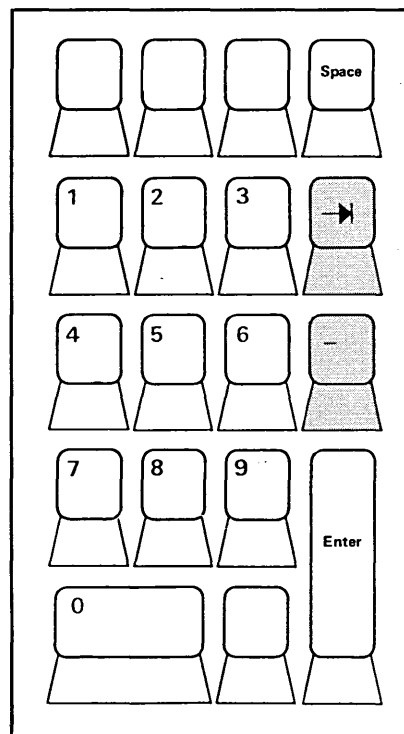
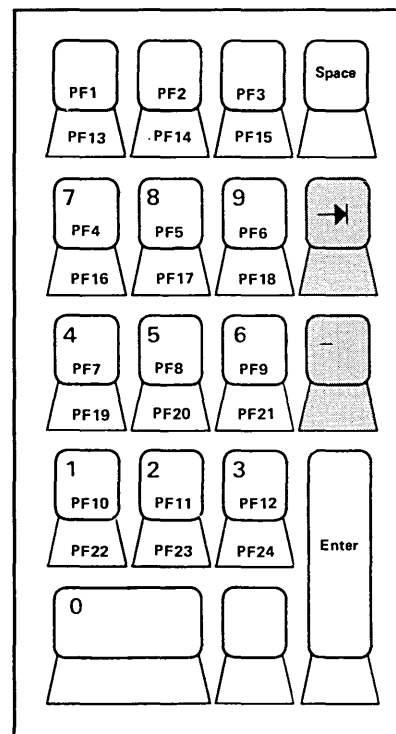
In native mode, depending on the Setup switch settings, the keyboard is defined as one of the standard keyboard layouts (Typewriter, Data Entry, or APL), or any of four unique layouts defined by using the Keyboard Definition Utility. Four of the seven keyboard layouts (standard plus unique) may be selected during customizing. To operate in native mode, the 3179 must be attached to a 3274 equipped with Configuration Support D, Release Level 63 or higher, or to a 3174 with Configuration Support A. The 3276 does not support native mode.

Two optional keypads—the data entry and program function keys—are available through modification of the standard National Language Numeric Keypad (shown in Figures 5-2 through 5-25) or during customization of the control unit. Comma and period keytops sometimes switch positions on the three keypads, depending on the national language in question. (See Figure 5-1.)

Most keys have removable keycaps that are interchangeable with other keycaps. Keycaps for Data Entry and APL layouts can be ordered. Other keycap accessories are also available.

Keyboard Layouts

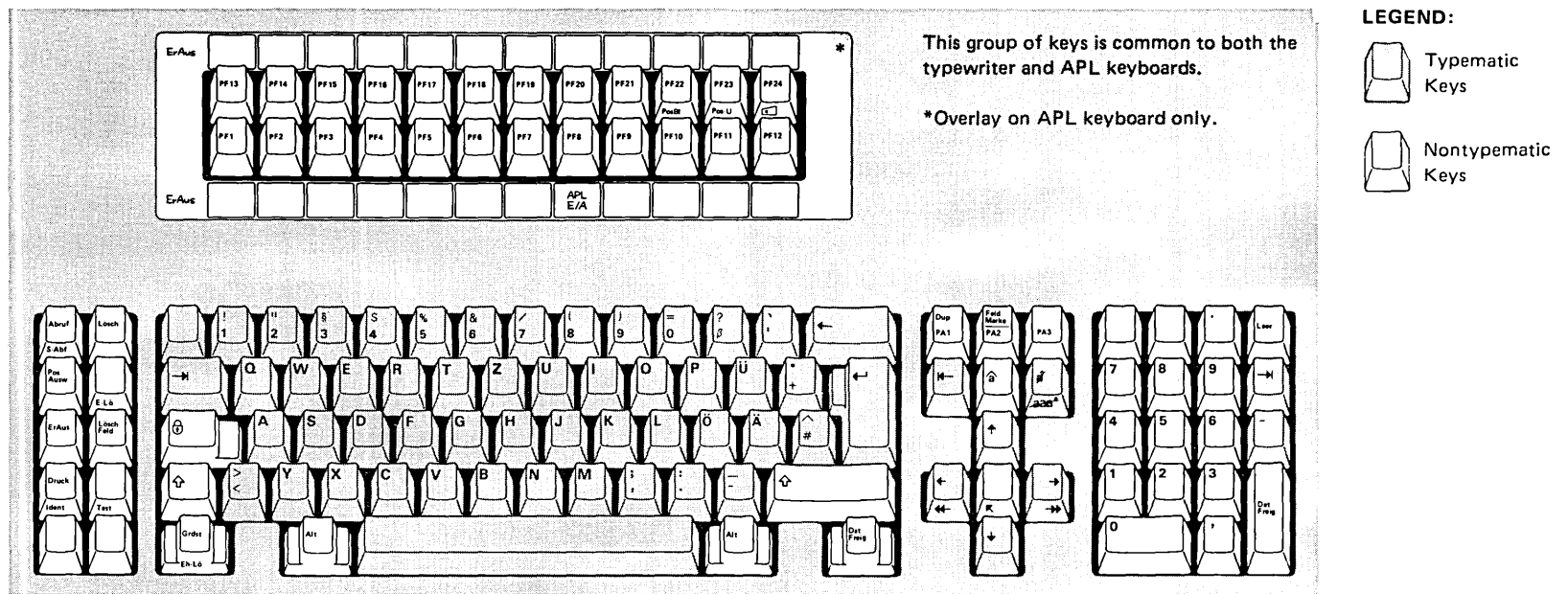
■ Figures 5-1 through 5-25 illustrate the 3179 keyboard and keypad layouts for the various national languages.

National Language Numeric Keypad^{1, 2}Data Entry Keypad¹Program Function Keypad¹**LEGEND:**Typematic
KeysNontypematic
Keys

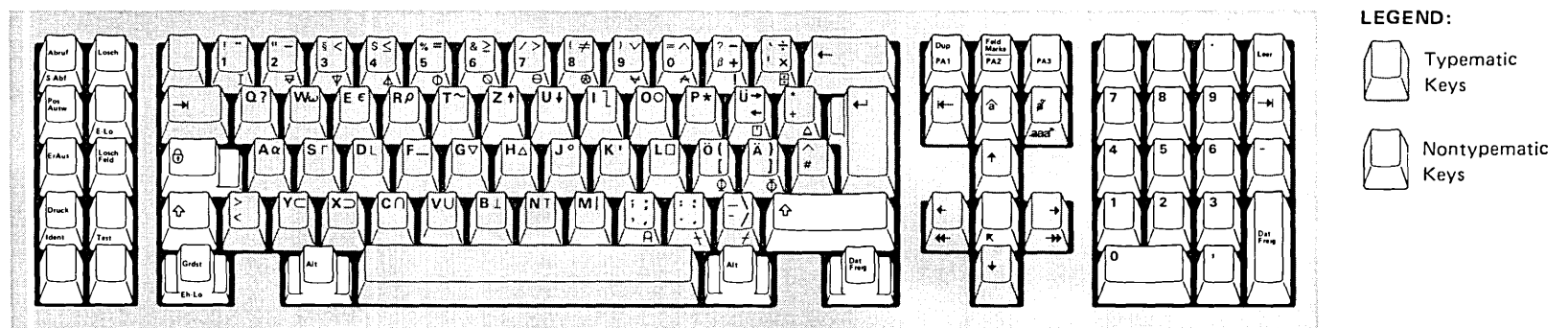
¹ The period and comma keytops switch positions on each keypad for the following languages: Austrian/German, Belgian, Danish, Finnish/Swedish, French AZERTY, Italian, Norwegian, Portuguese, Spanish-Speaking, Swiss-French, and Swiss-German. Canadian-French, English (U.K.), English (U.S.), and Japanese Katakana have the standard keypad layouts.

² In emulation mode, the numeric keypad will not operate in uppercase.

Figure 5-1. 3179 Color Display Station Keypads (English [U.S.])

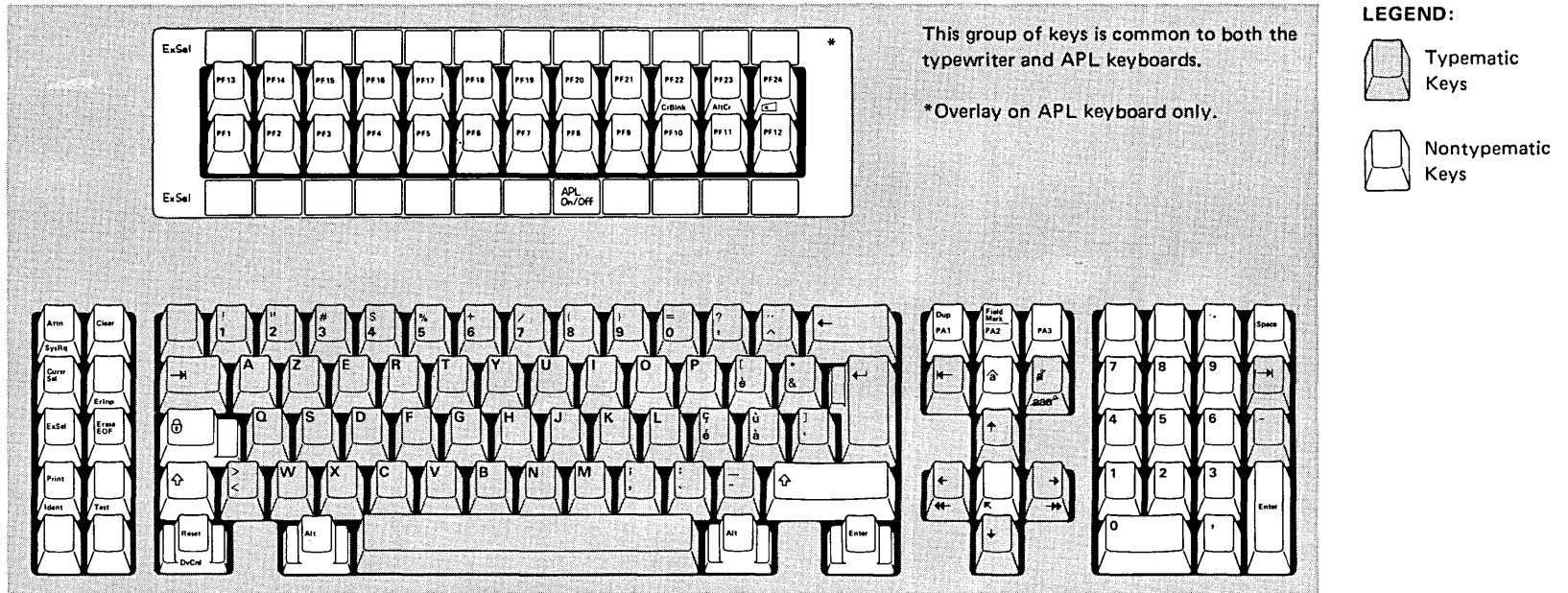


Typewriter Keyboard

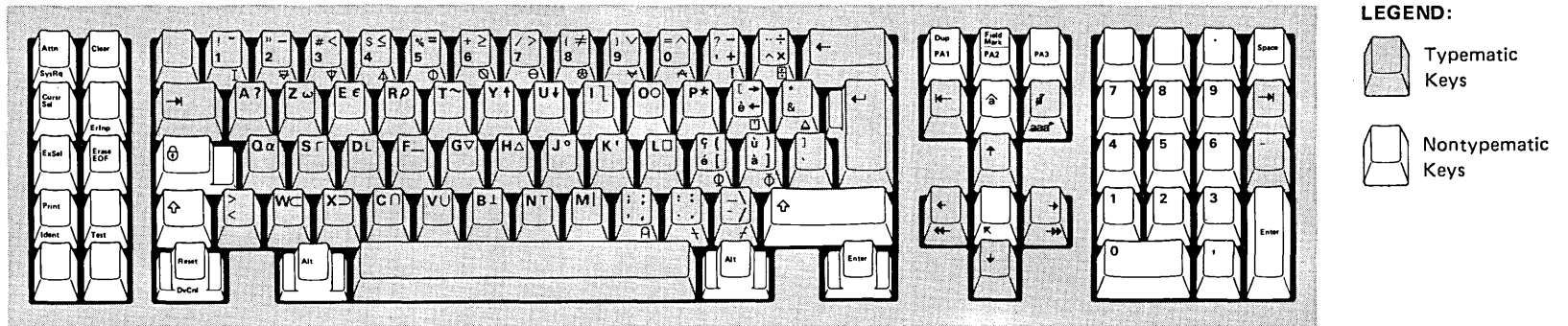


APL Accessory Layout

Figure 5-2. Austrian/German Keyboards for 3179 Color Display Station

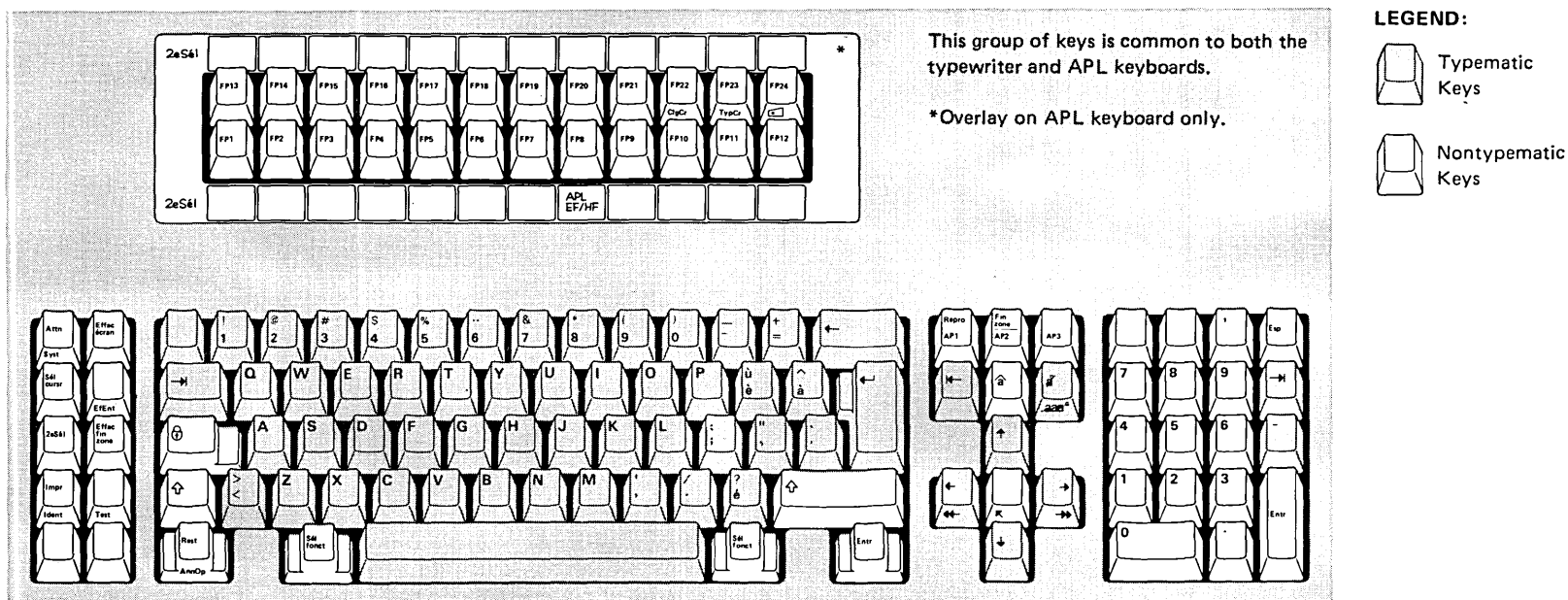


Typewriter Keyboard

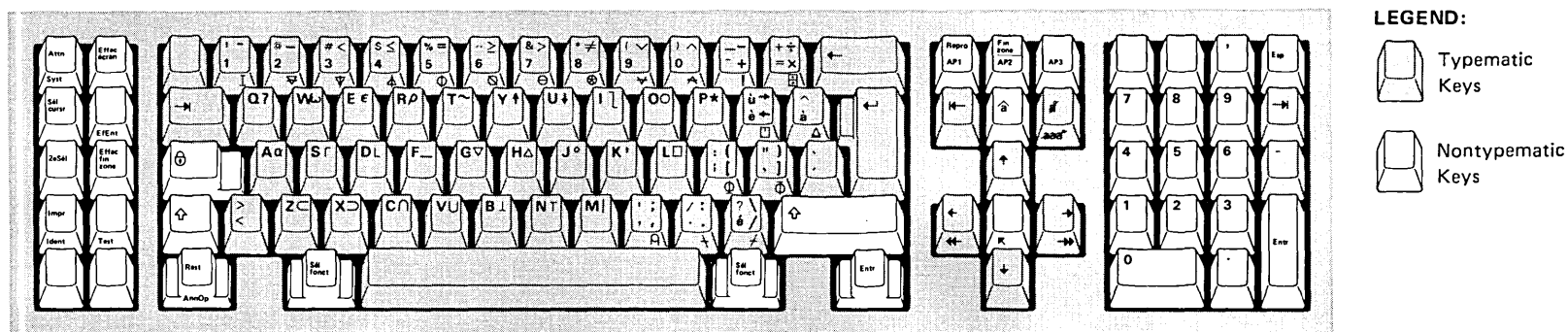


APL Accessory Layout

Figure 5-3. Belgian Keyboards for 3179 Color Display Station

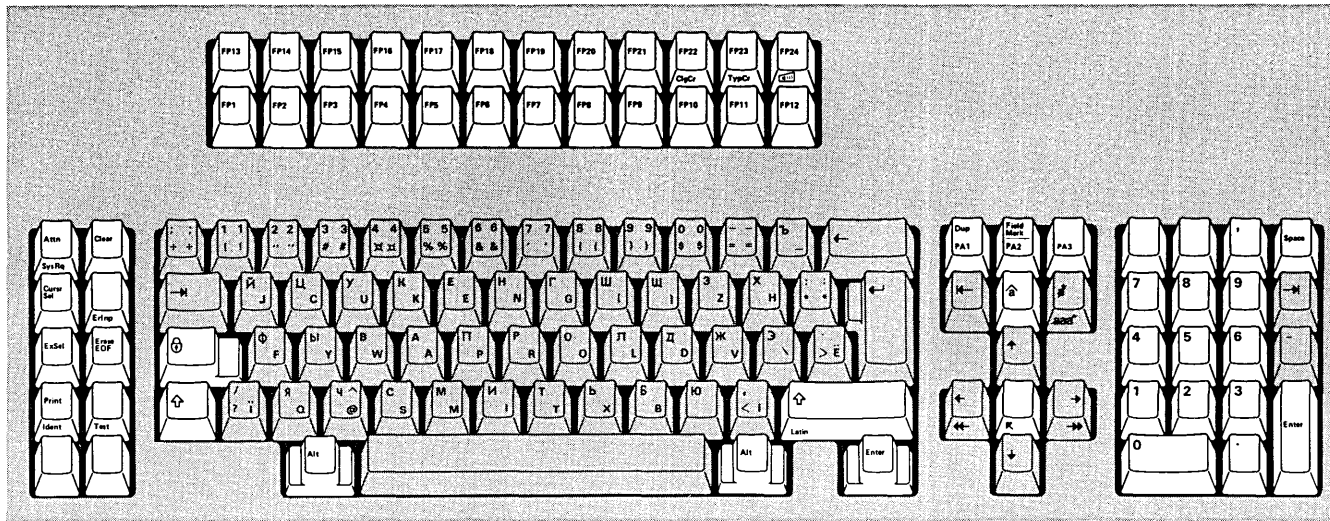


Typewriter Keyboard



APL Accessory Layout

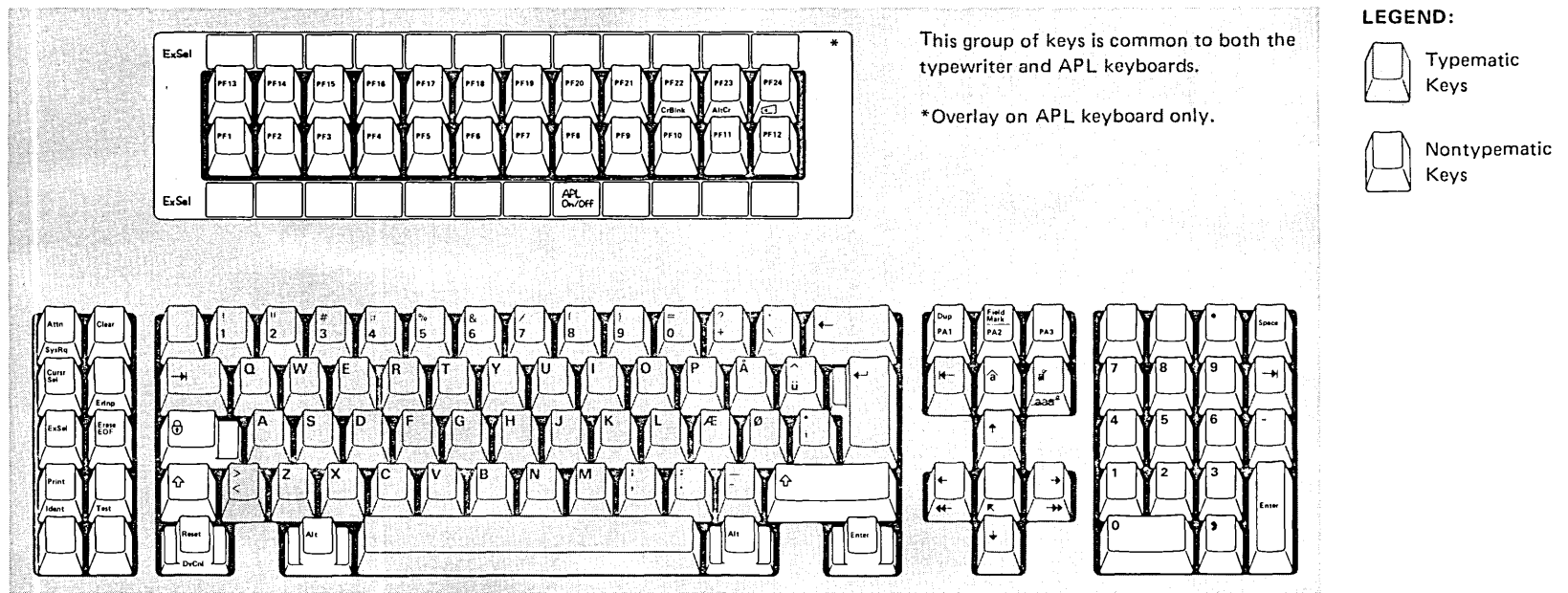
Figure 5-4. Canadian-French Keyboards for 3179 Color Display Station



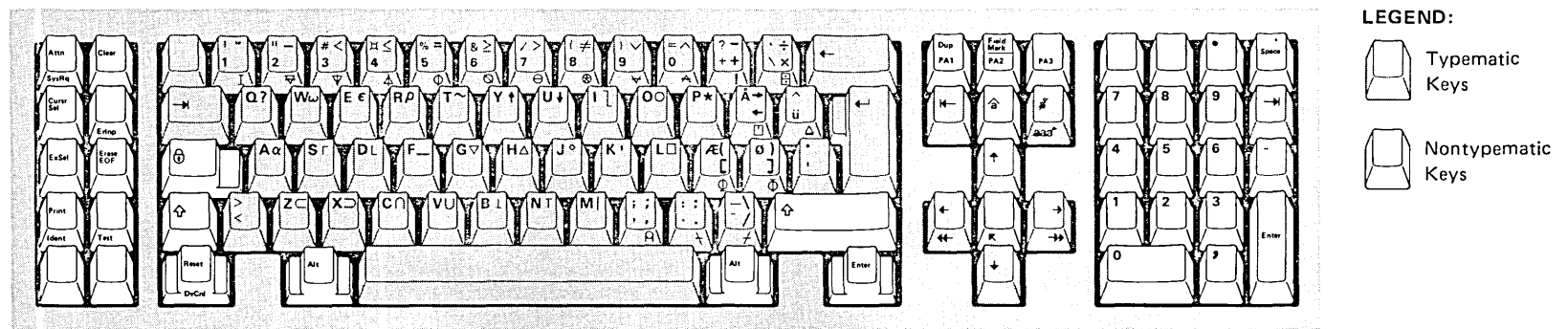
Typewriter Keyboard

Note: The Cyrillic keyboard is a 3179 Color Display Station RPQ item.

Figure 5-5. Cyrillic Keyboard for 3179 Color Display Station (Not Supported by 3274 and 3276)

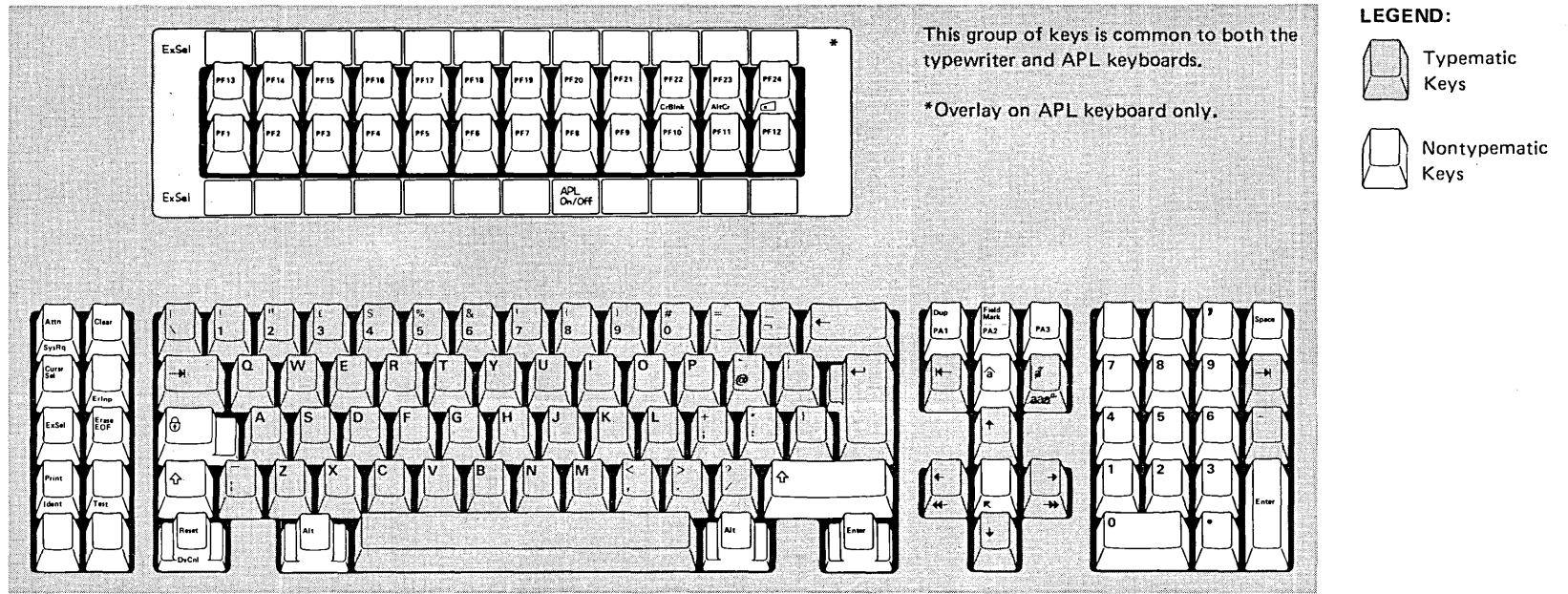


Typewriter Keyboard

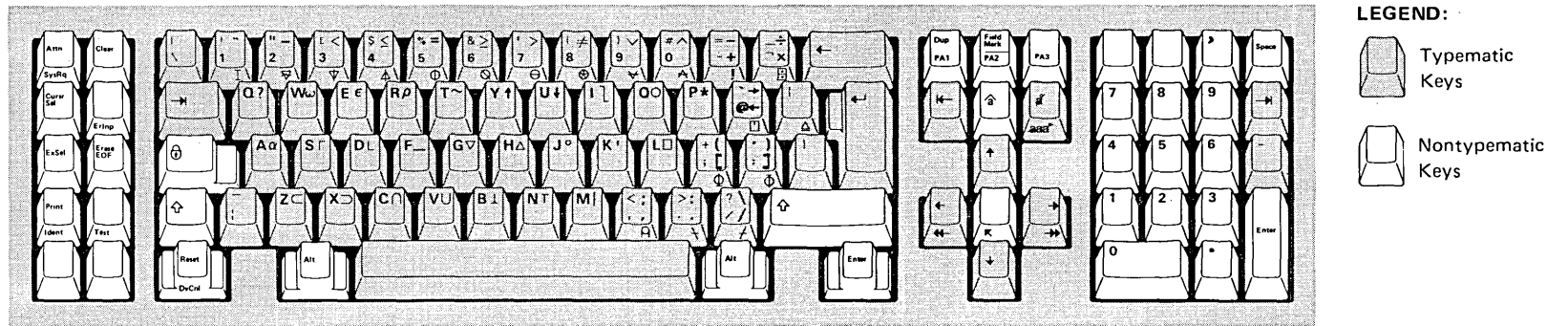


APL Accessory Layout

Figure 5-6. Danish Keyboards for 3179 Color Display Station

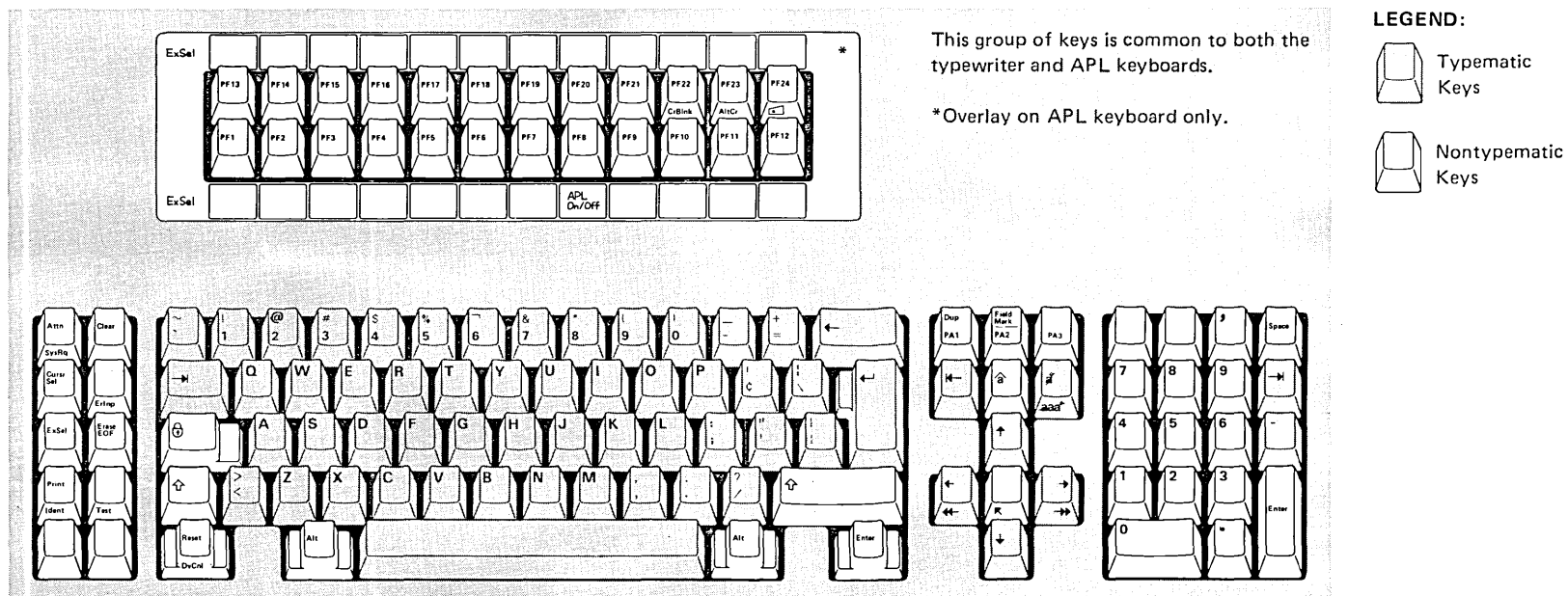


Typewriter Keyboard

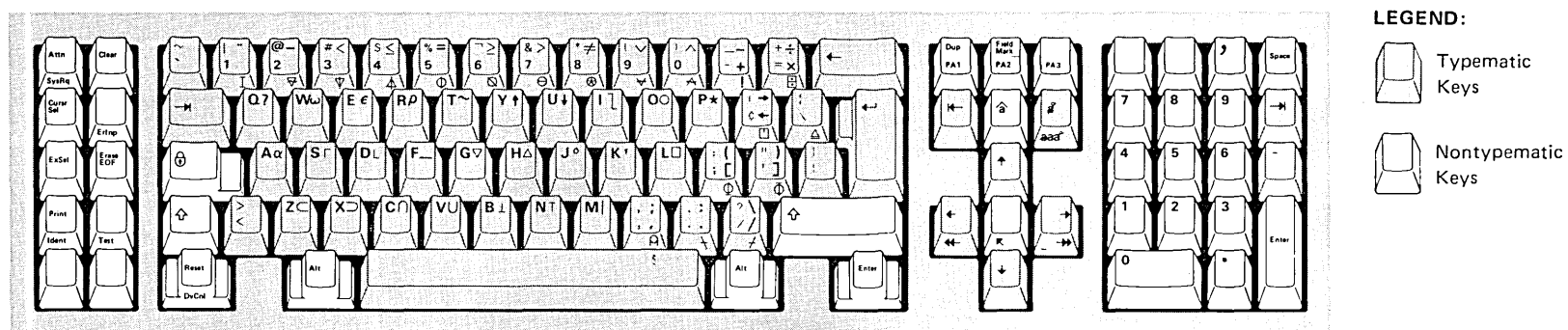


APL Accessory Layout

Figure 5-7. English (U.K.) Keyboards for 3179 Color Display Station

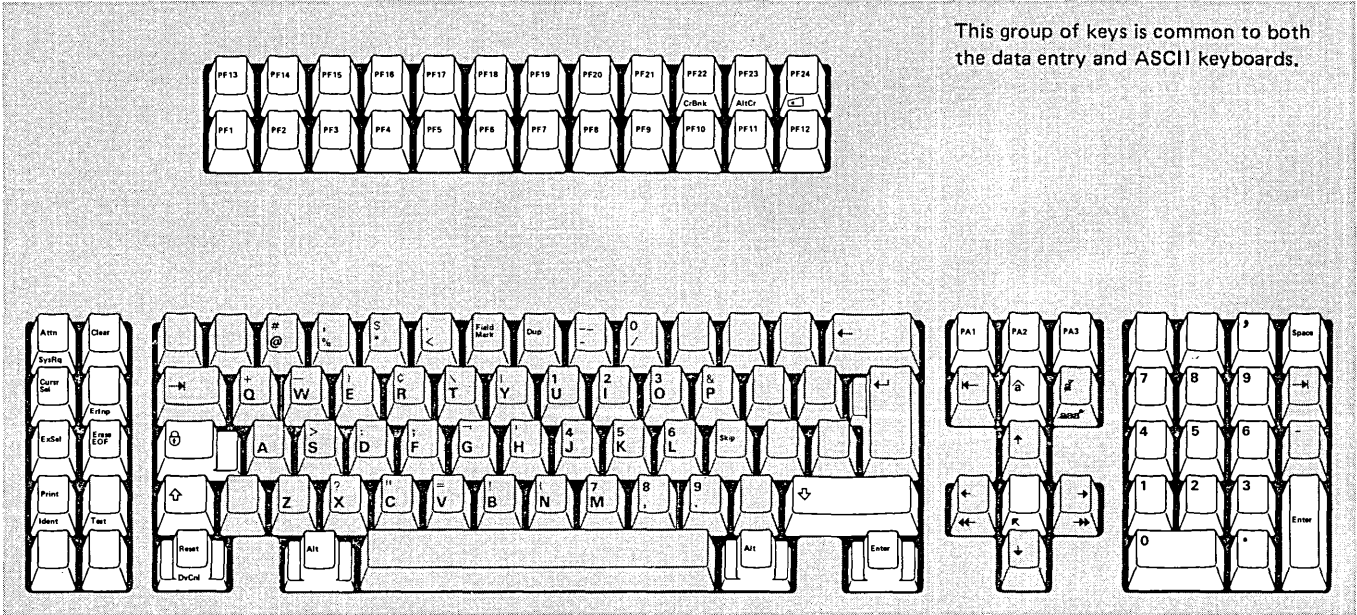


Typewriter Keyboard

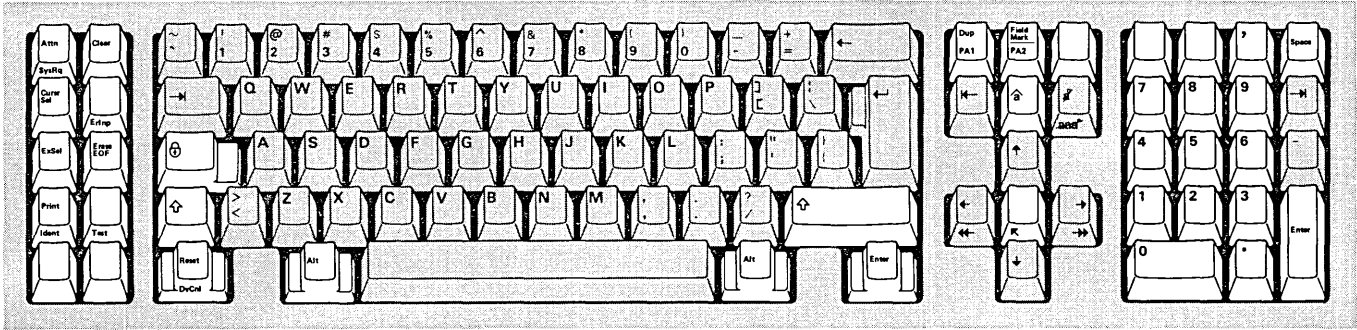


APL Accessory Layout

Figure 5-8 (Part 1 of 2). English (U.S.) Keyboards for 3179 Color Display Station

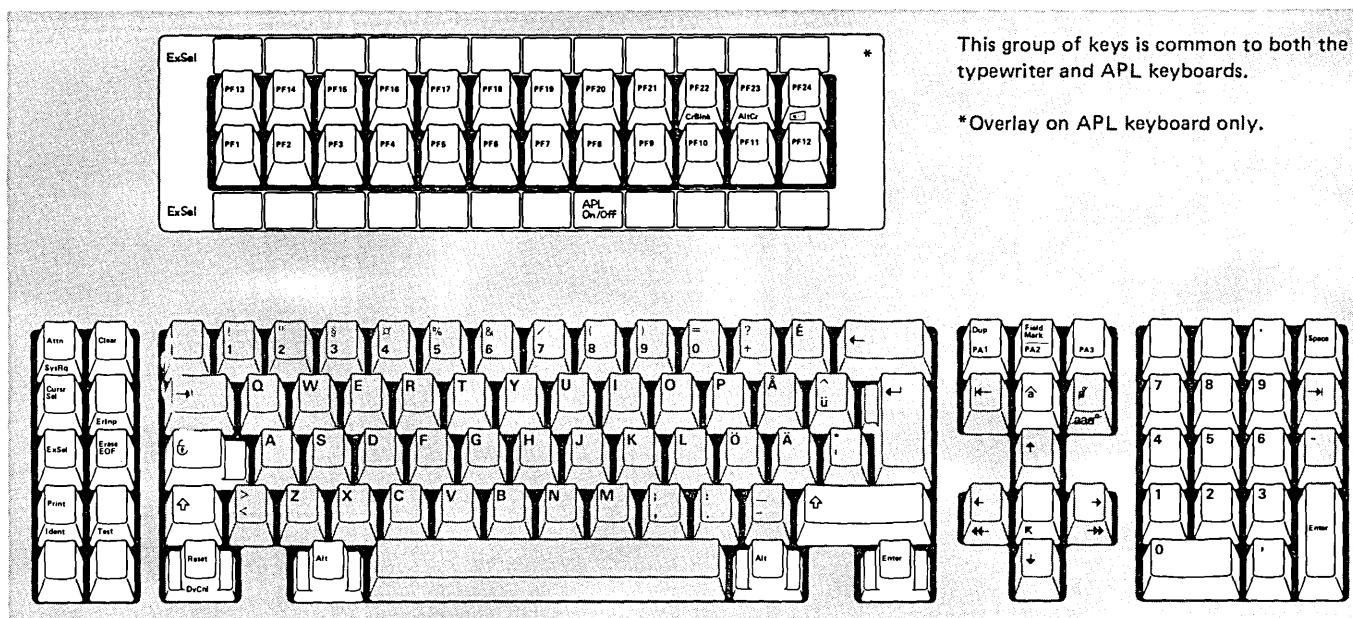


Data Entry Accessory Layout

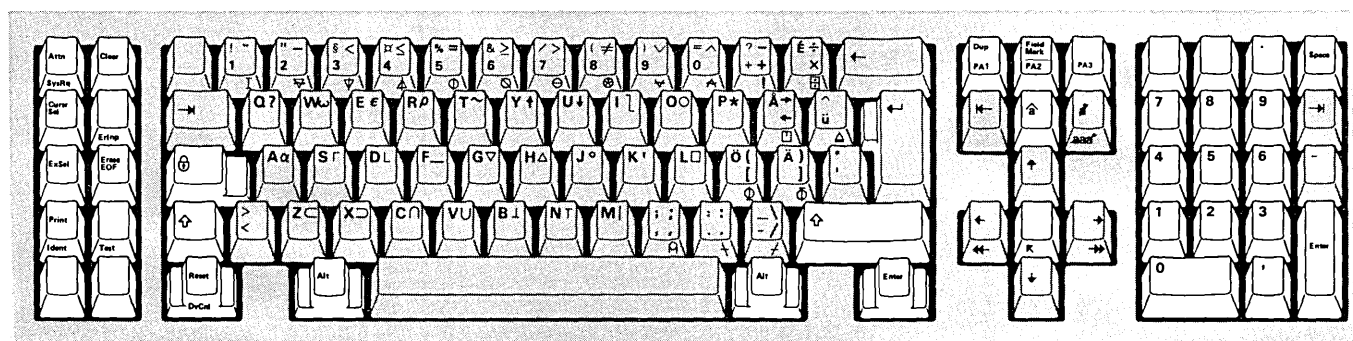


ASCII Keyboard

Figure 5-8 (Part 2 of 2). English (U.S.) Keyboards for 3179 Color Display Station

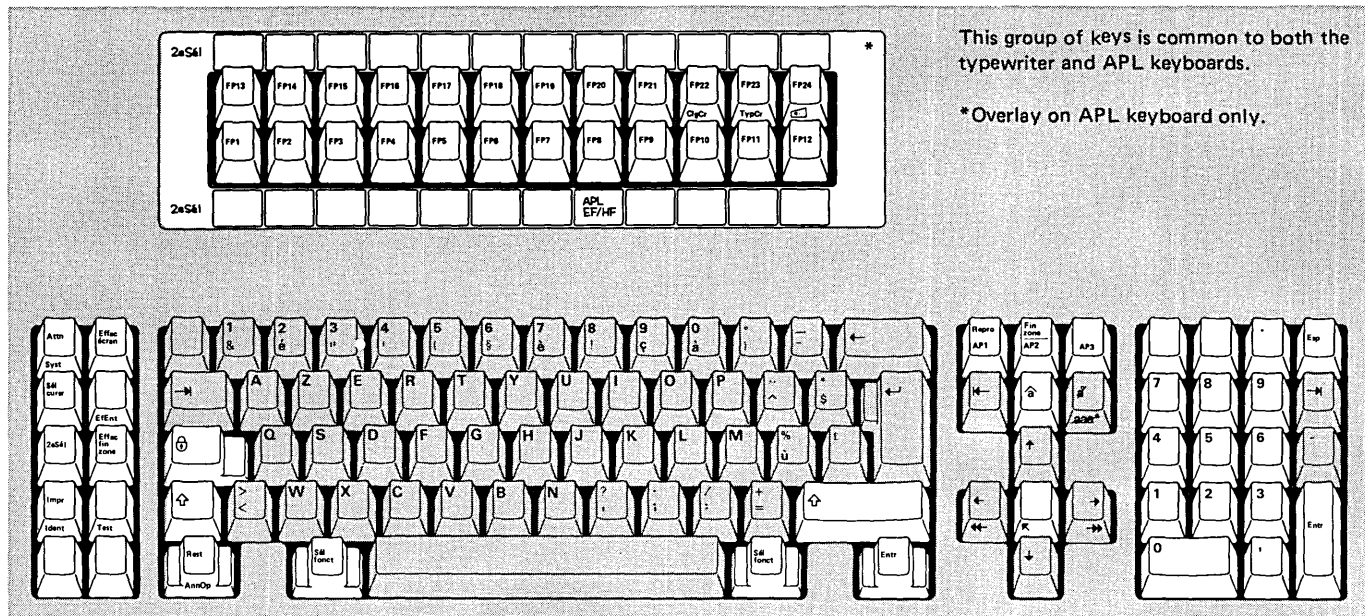


Typewriter Keyboard



APL Accessory Layout

Figure 5-9. Finnish/Swedish Keyboards for 3179 Color Display Station



LEGEND:

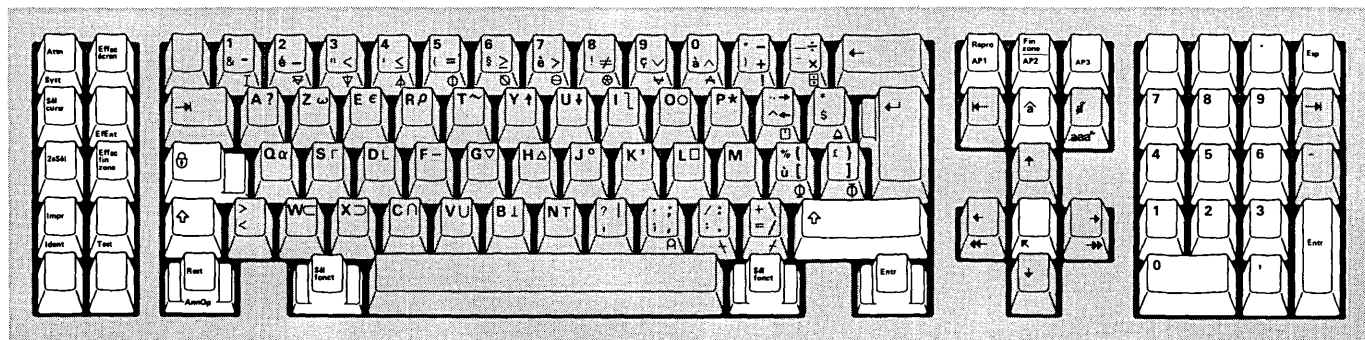


Typematic
Keys



Nontypematic
Keys

Typewriter Keyboard (native mode only)



LEGEND:



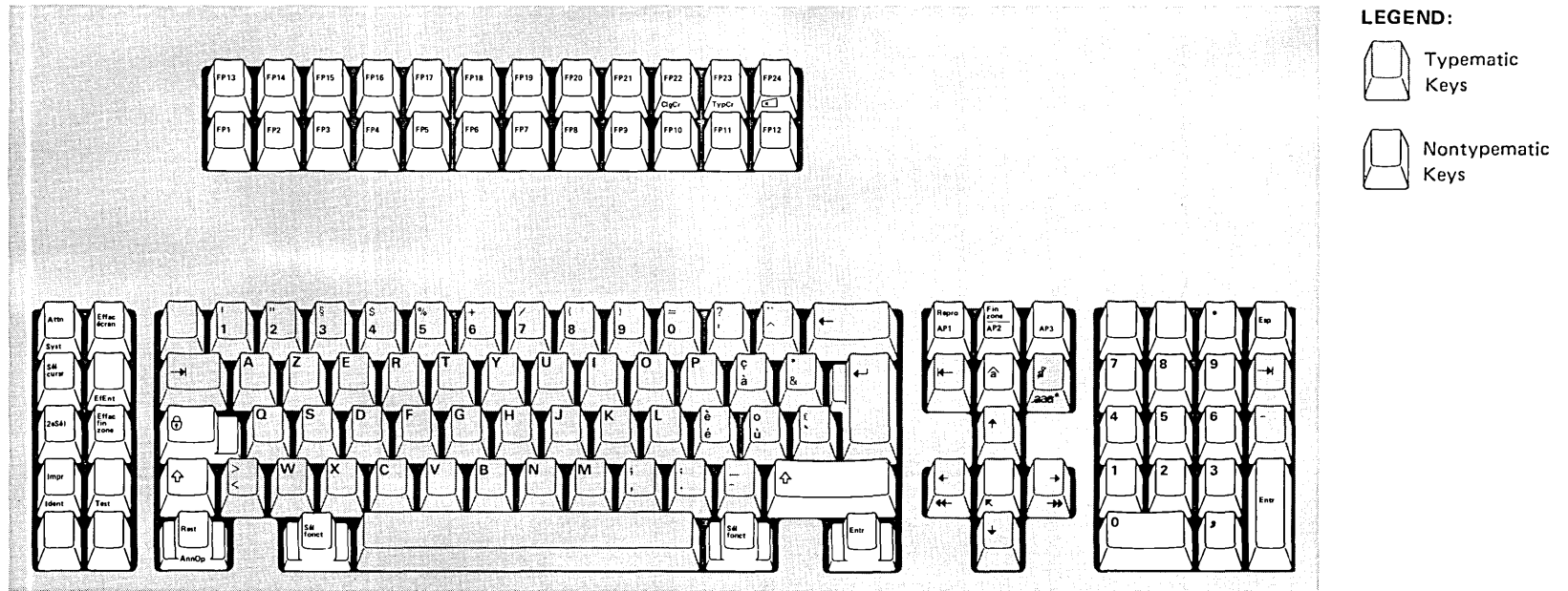
Typematic
Keys



Nontypematic
Keys

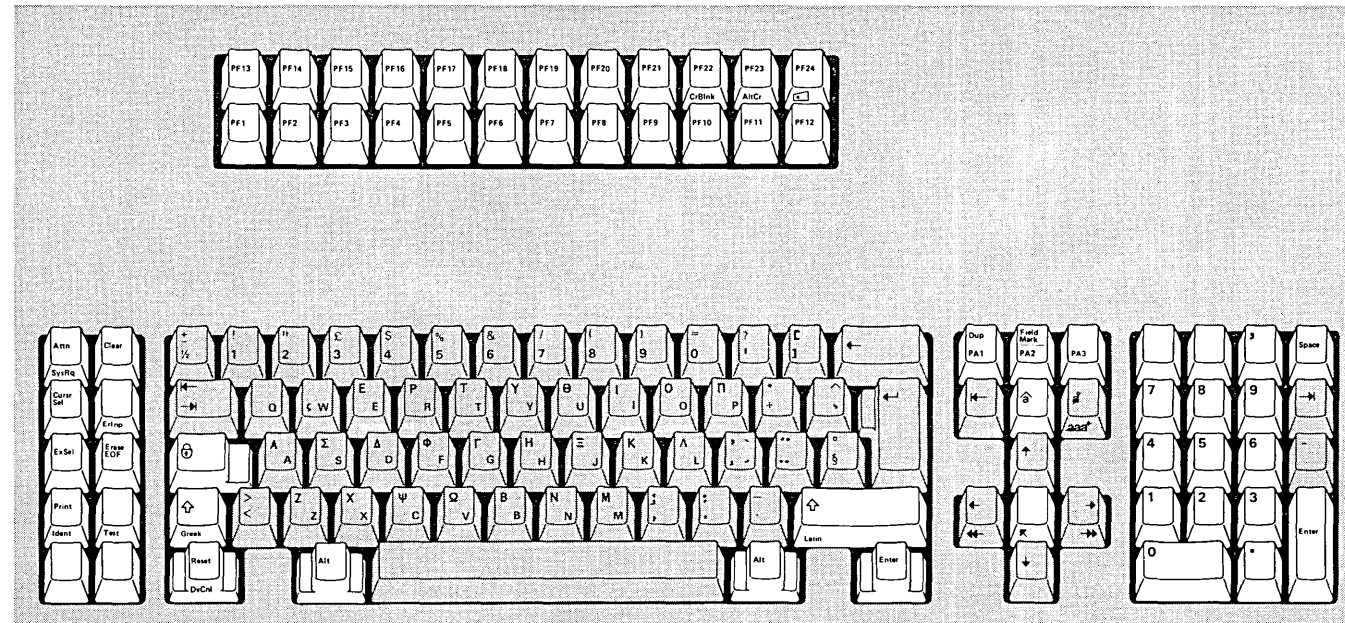
APL Accessory Layout (native mode only)

Figure 5-10 (Part 1 of 2). French (AZERTY) Keyboards for 3179 Color Display Station



Data Processing Typewriter Accessory Layout

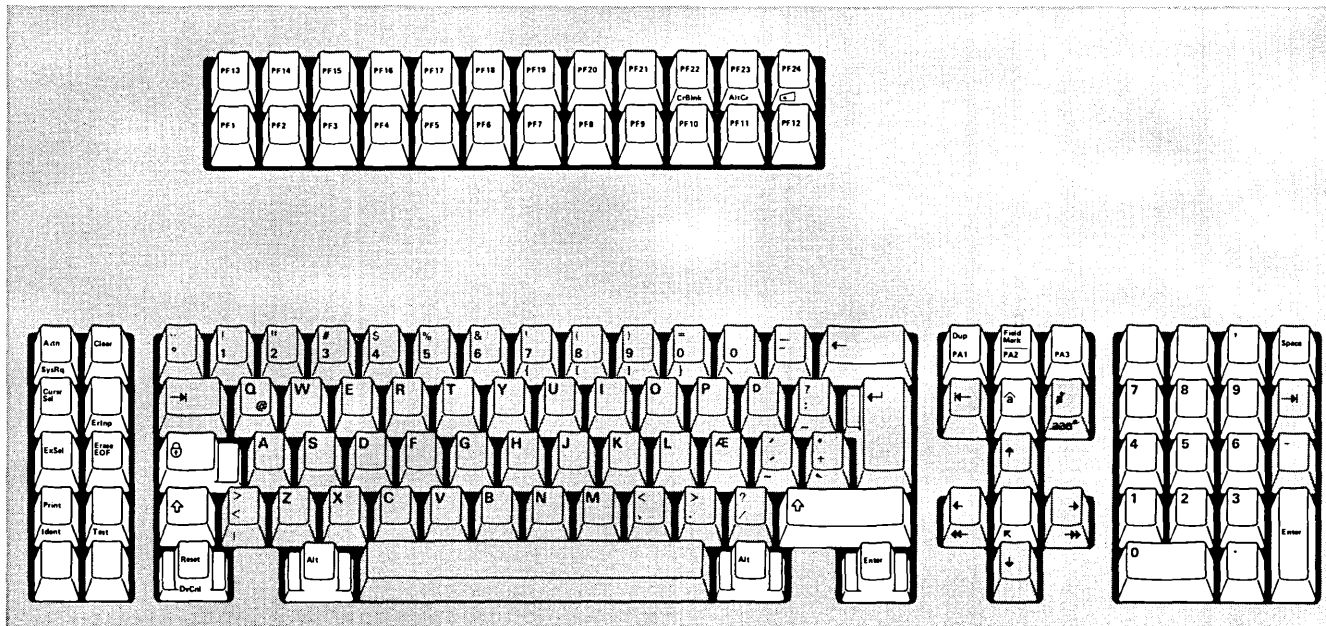
Figure 5-10 (Part 2 of 2). French (AZERTY) Keyboards for 3179 Color Display Station



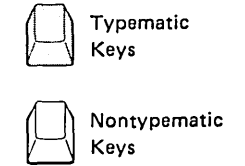
Typewriter Keyboard

Note: The Greek keyboard is a 3179 Color Display Station RPQ item.

Figure 5-11. Greek Keyboard for 3179 Color Display Station (Not Supported by 3274 and 3276)



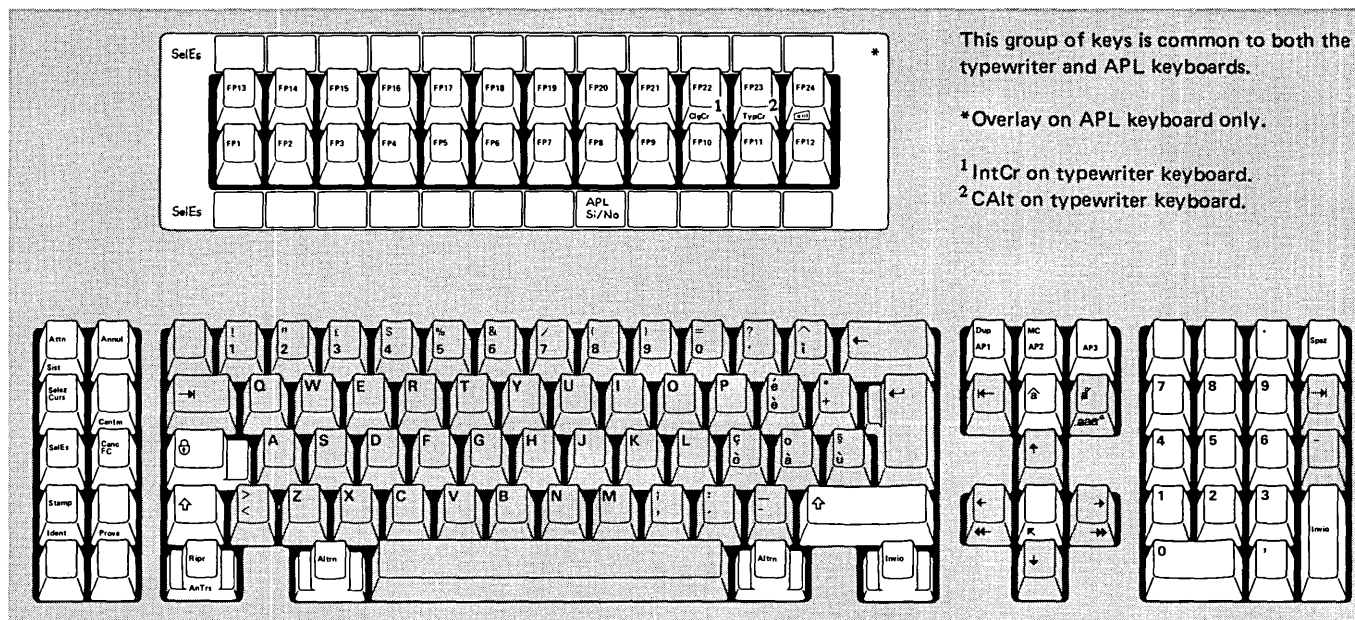
LEGEND:



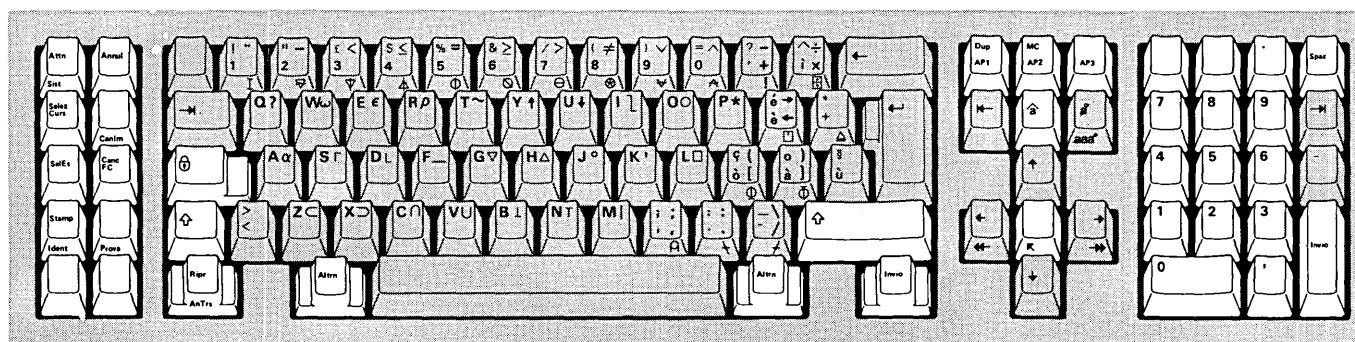
Typewriter Keyboard

Note: The Icelandic keyboard is a 3179 Color Display Station RPQ item.

Figure 5-12. Icelandic Keyboard for 3179 Color Display Station (Not Supported by 3274 and 3276)

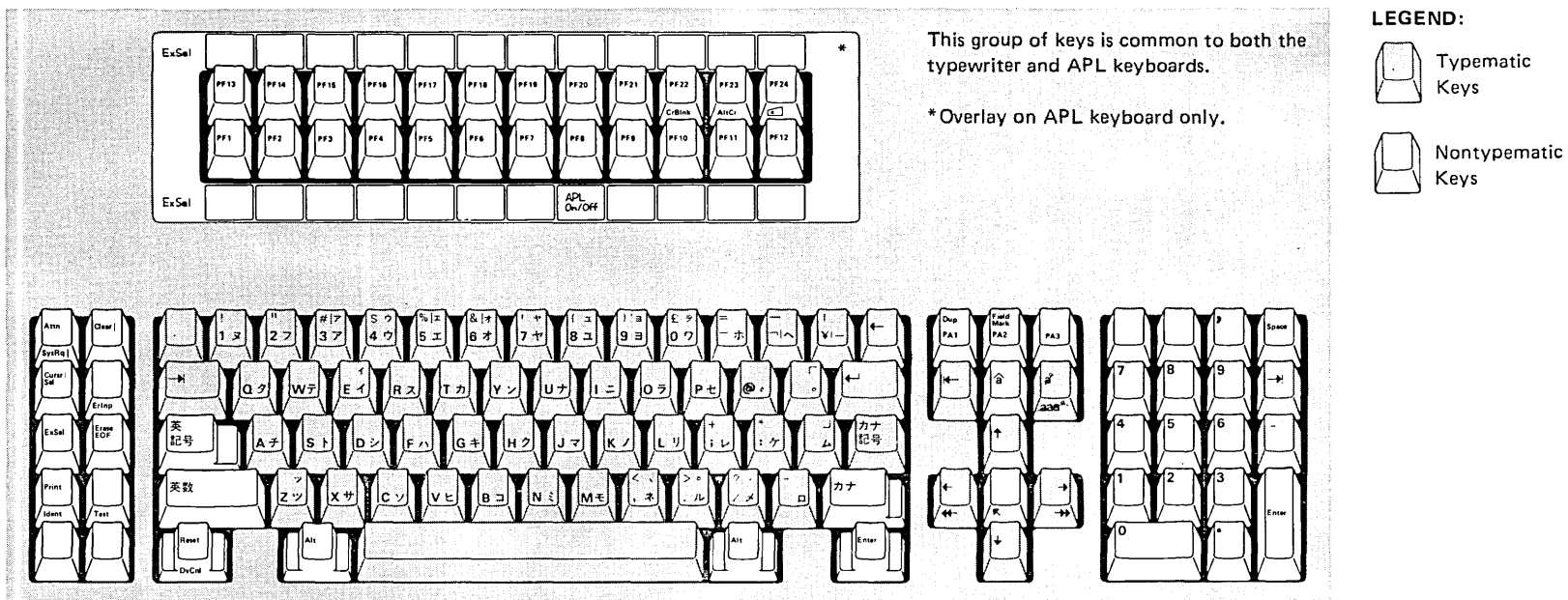


Typewriter Keyboard

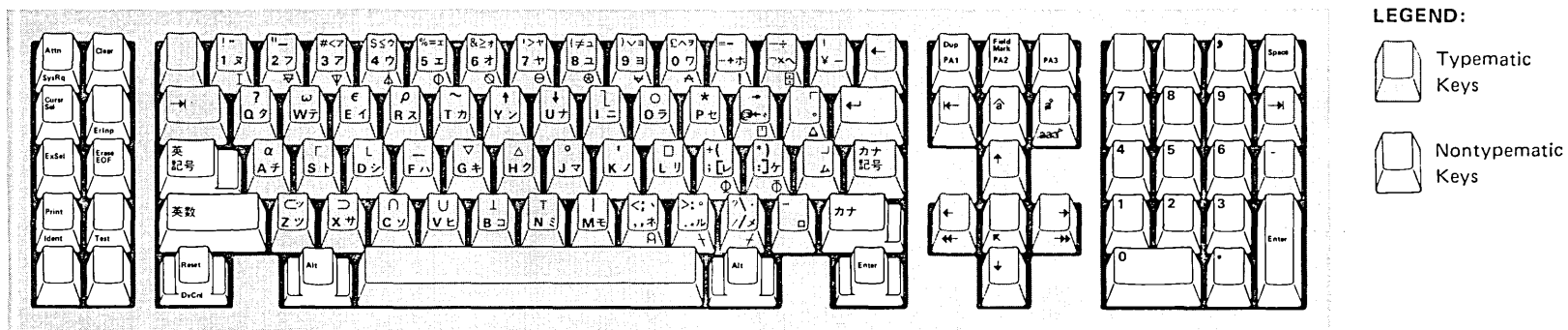


APL Accessory Layout

Figure 5-13. Italian Keyboards for 3179 Color Display Station

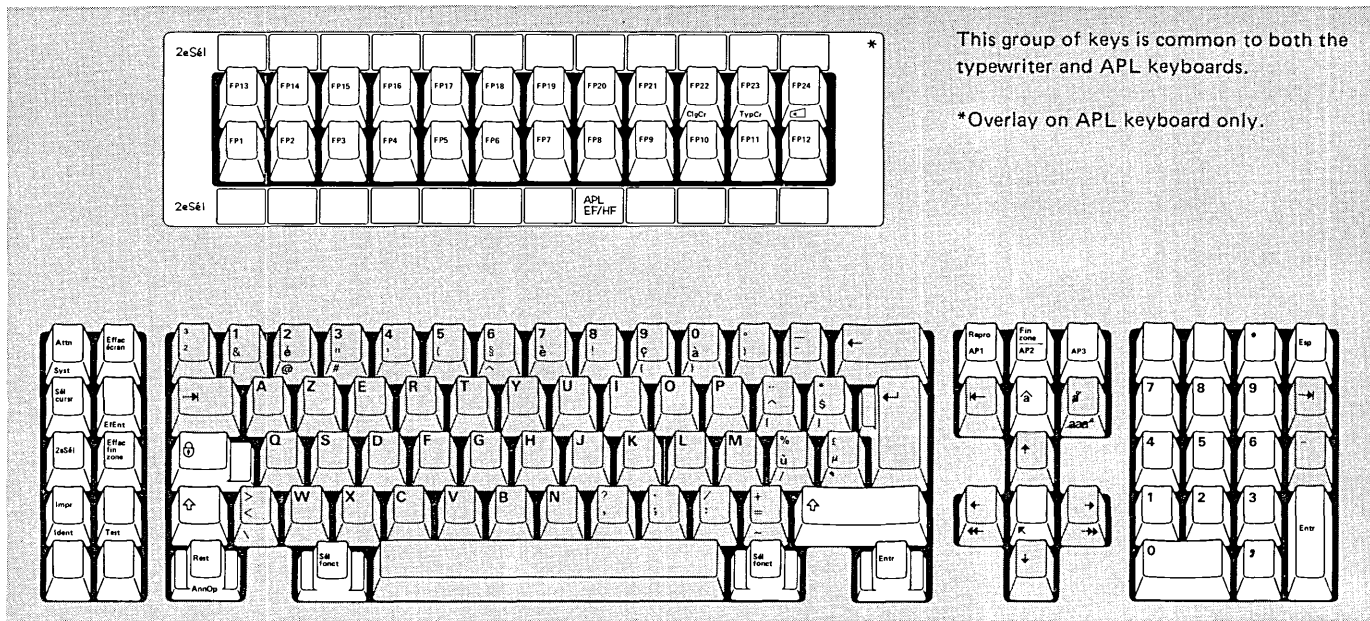


Typewriter Keyboard





APL Accessory Layout

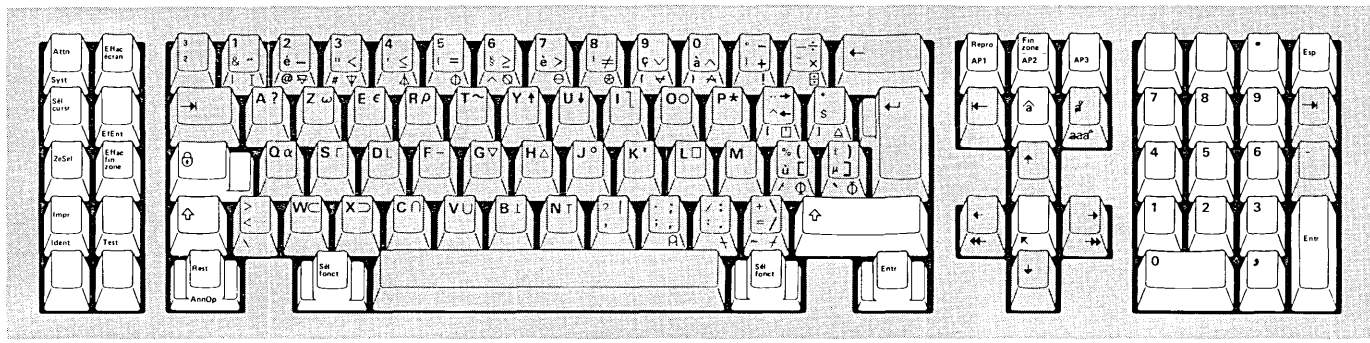
Figure 5-14. Japanese Katakana Keyboards for 3179 Color Display Station





LEGEND:

-  Typematic Keys
-  Nontypematic Keys

Typewriter Keyboard (native mode only)

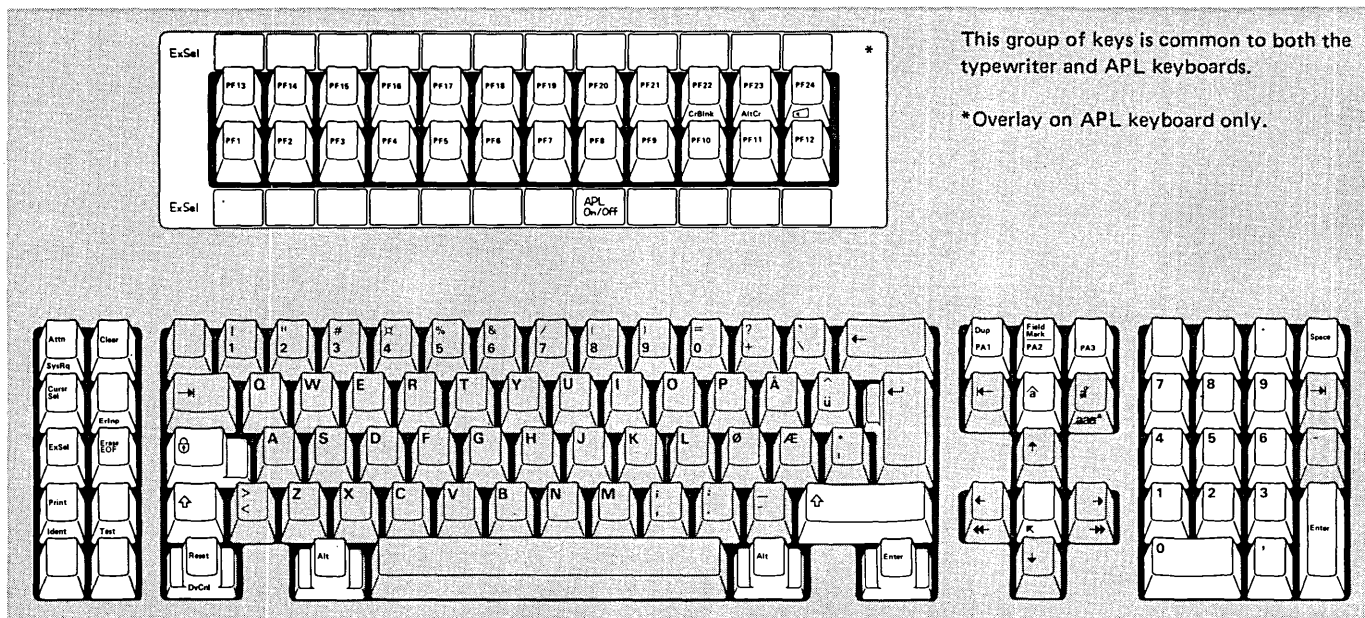


LEGEND:

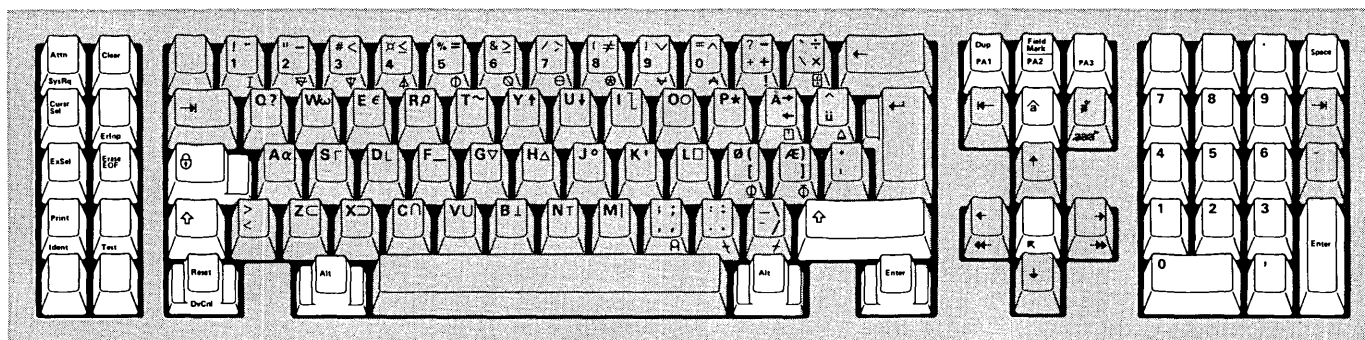
-  Typematic Keys
-  Nontypematic Keys

APL Accessory Layout

Figure 5-15. New Belgian Keyboards for 3179 Color Display Station (Not Supported by 3274 and 3276)

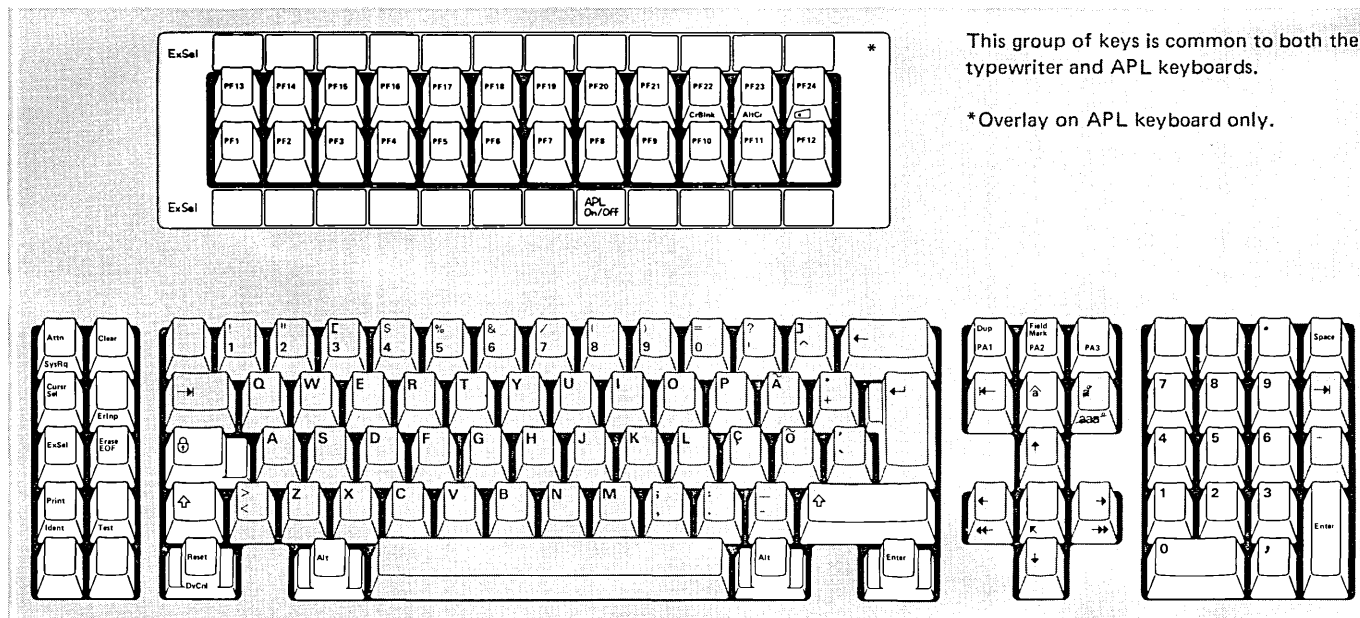


Typewriter Keyboard

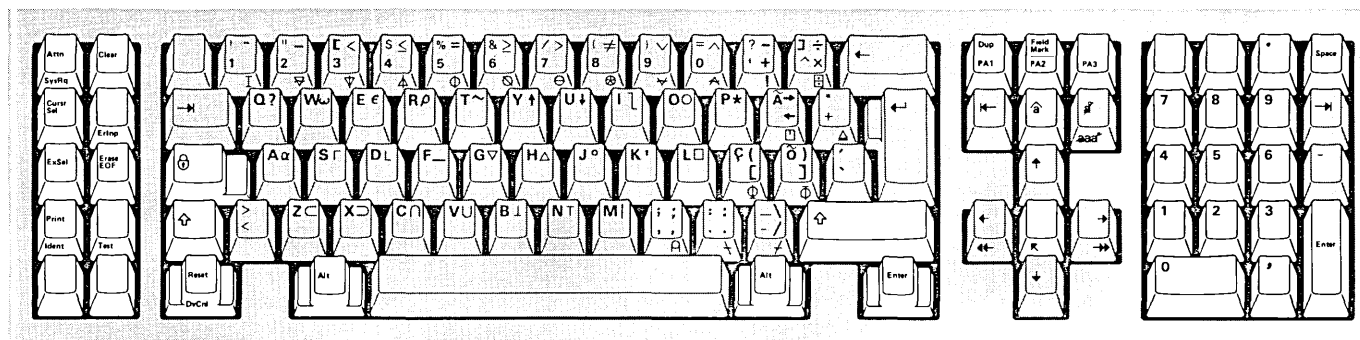


APL Accessory Layout

Figure 5-17. Norwegian Keyboards for 3179 Color Display Station

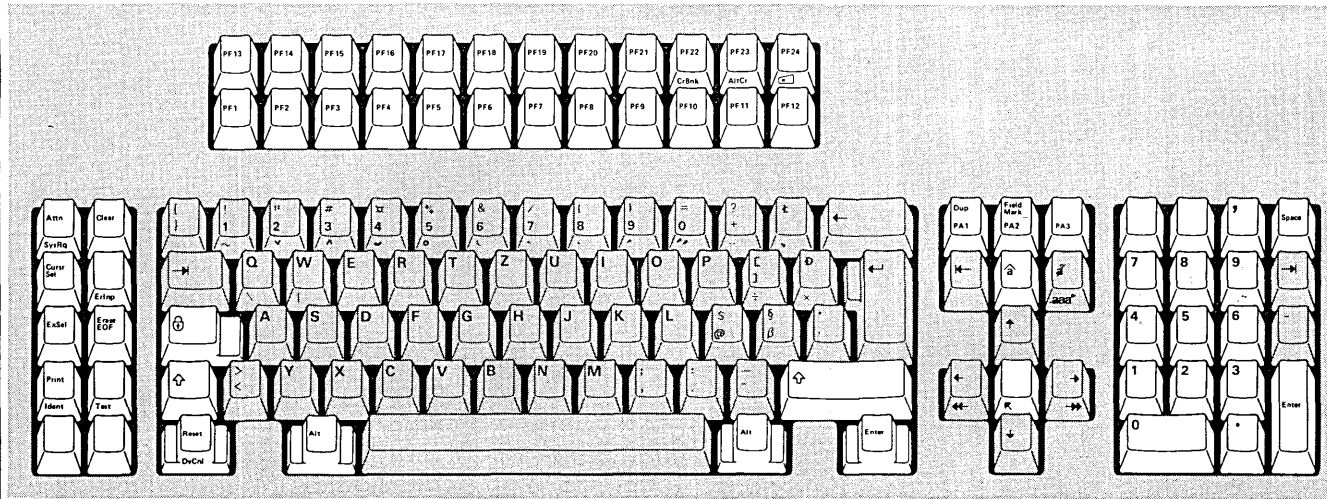


Typewriter Keyboard



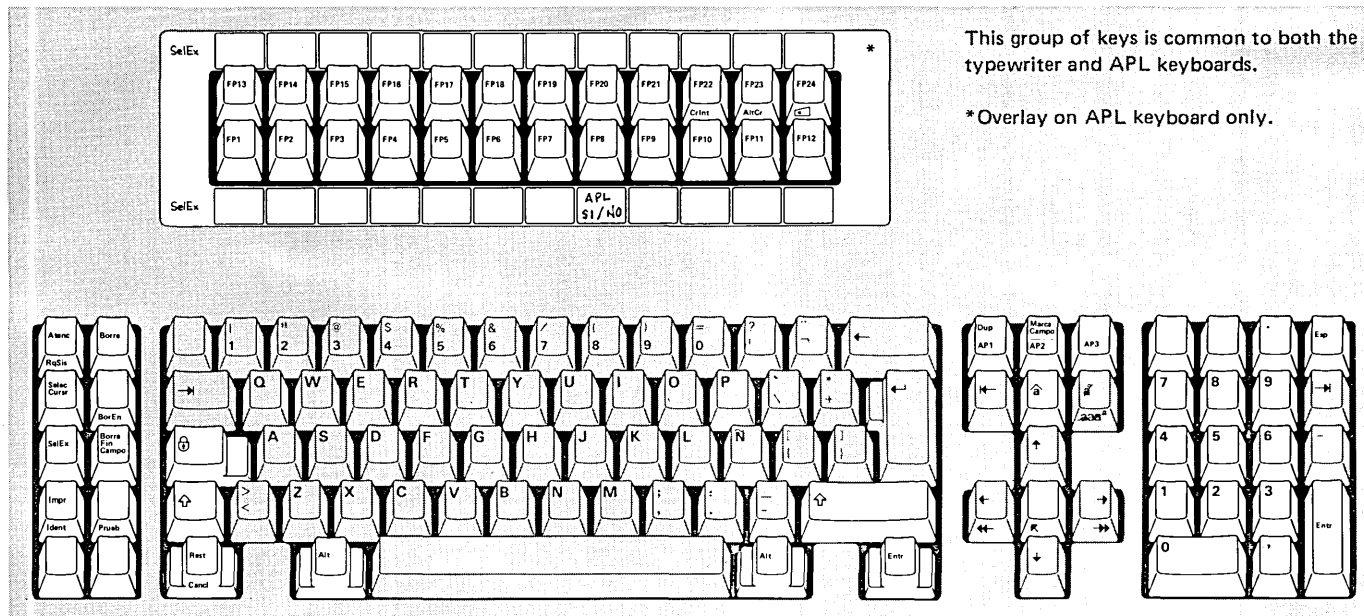
APL Accessory Layout

Figure 5-18. Portuguese Keyboards for 3179 Color Display Station



Typewriter Keyboard

Figure 5-18.1. ROECE Latin Keyboard for 3179 Color Display Station



This group of keys is common to both the typewriter and APL keyboards.

*Overlay on APL keyboard only.

LEGEND:

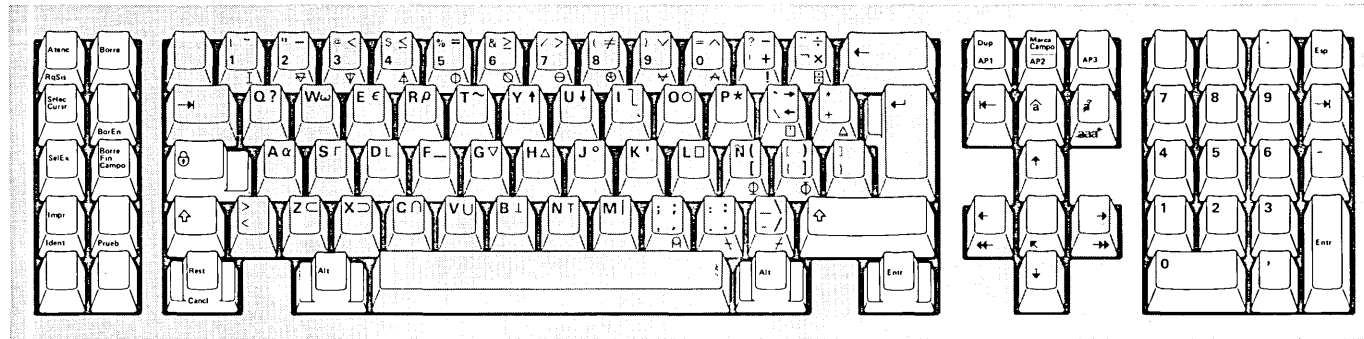


Typematic
Keys



Nontypematic
Keys

Typewriter Keyboard



LEGEND:



Typematic
Keys

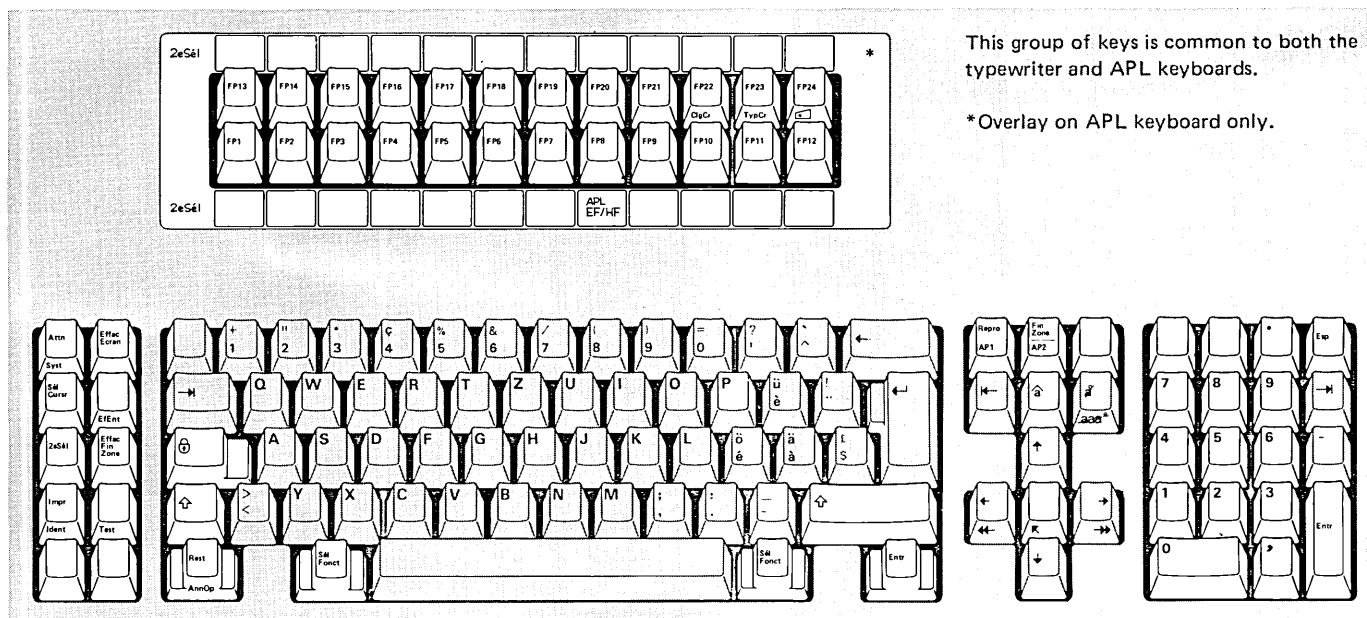


Nontypematic
Keys

APL Accessory Layout

Figure 5-19. Spanish-Speaking Keyboards for 3179 Color Display Station

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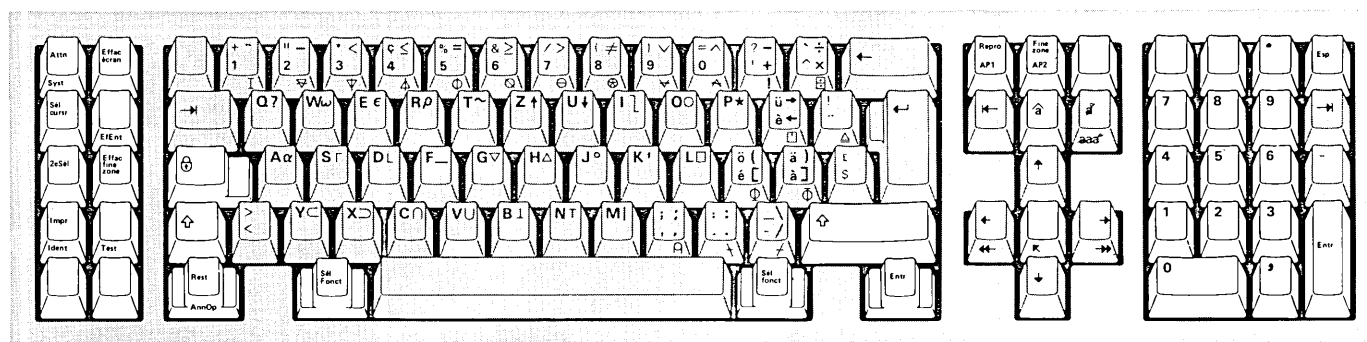


Typematic
Keys



Nontypematic
Keys

Typewriter Keyboard



LEGEND:



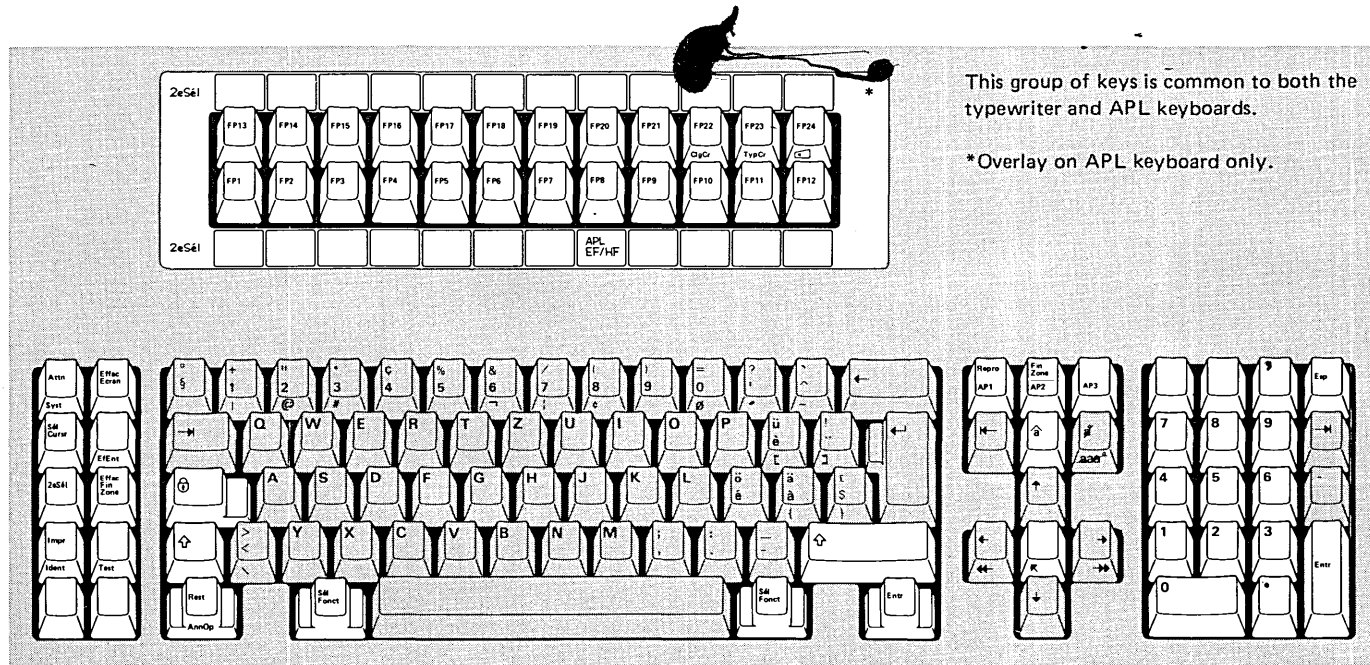
Typematic
Keys



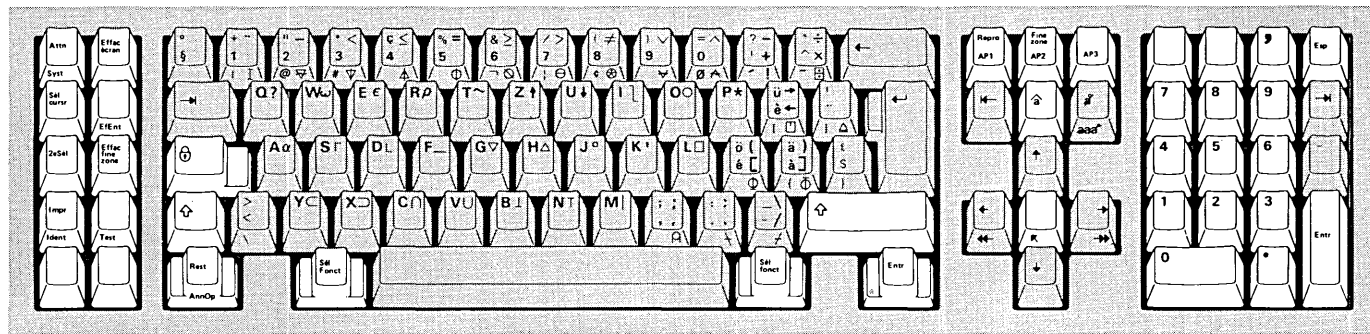
Nontypematic
Keys

APL Accessory Layout

Figure 5-20. Swiss-French Keyboards for 3179 Color Display Station (Not Supported by 3174)

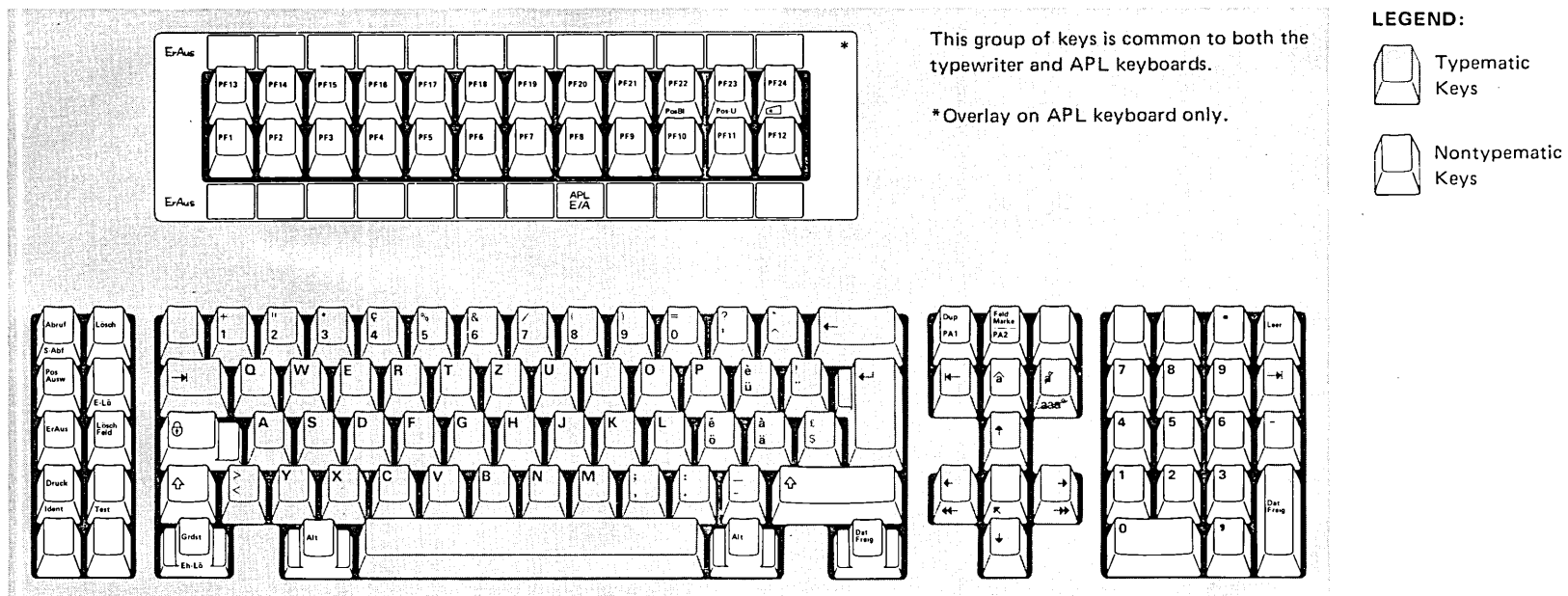


Typewriter Keyboard

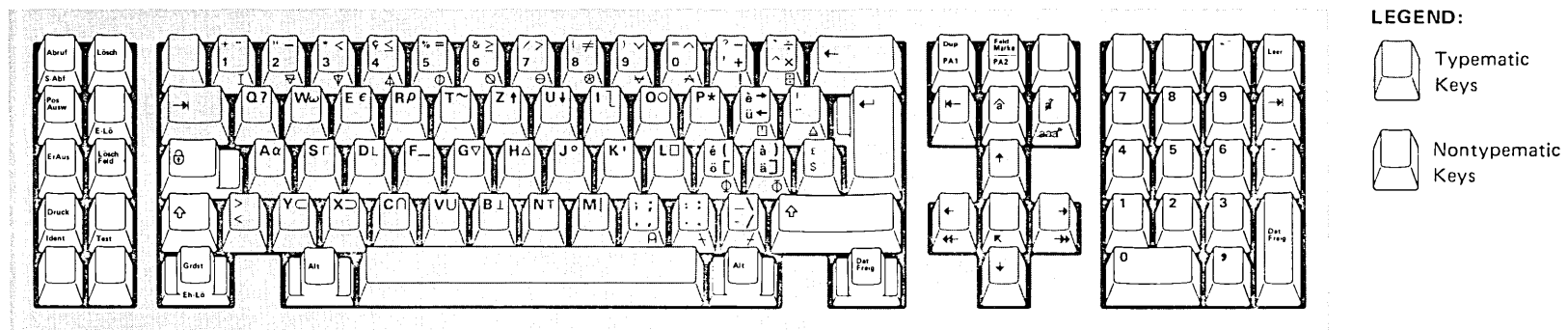


APL Accessory Layout

Figure 5-21. Swiss-French Extended Keyboards for 3179 Color Display Station (Not Supported by 3274 and 3276)

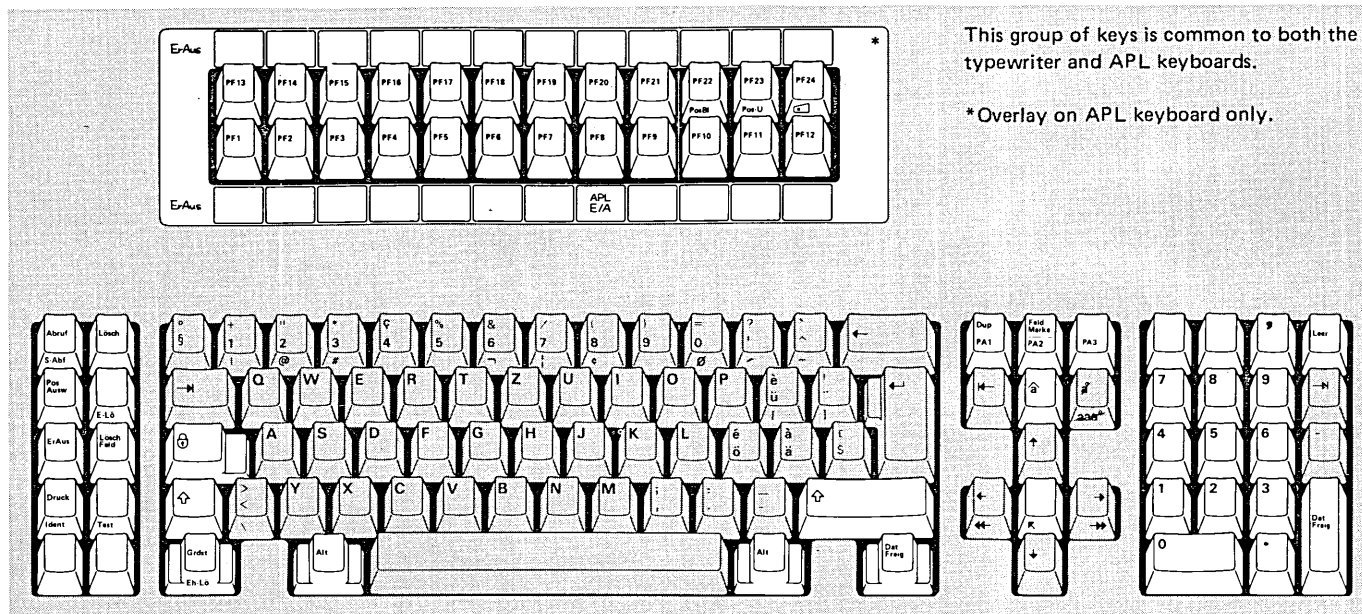


Typewriter Keyboard

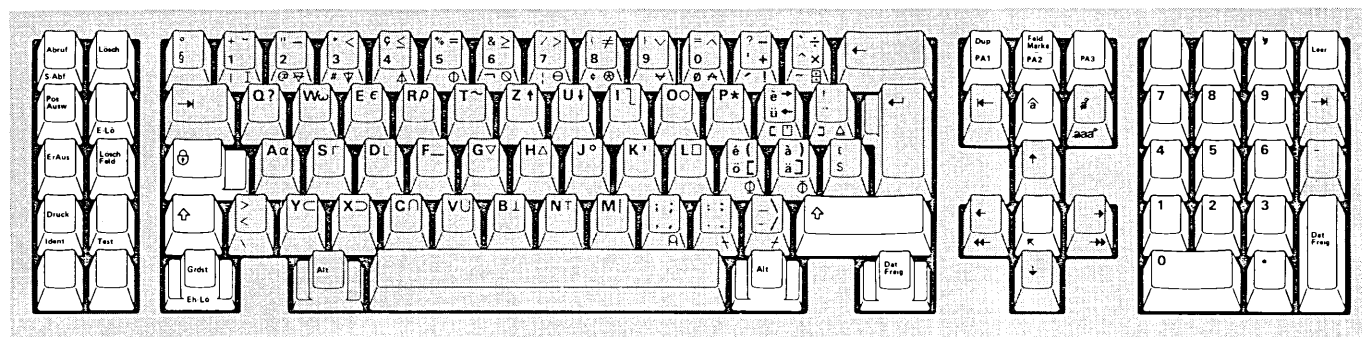


APL Accessory Layout

Figure 5-22. Swiss-German Keyboards for 3179 Color Display Station (Not Supported by 3174)

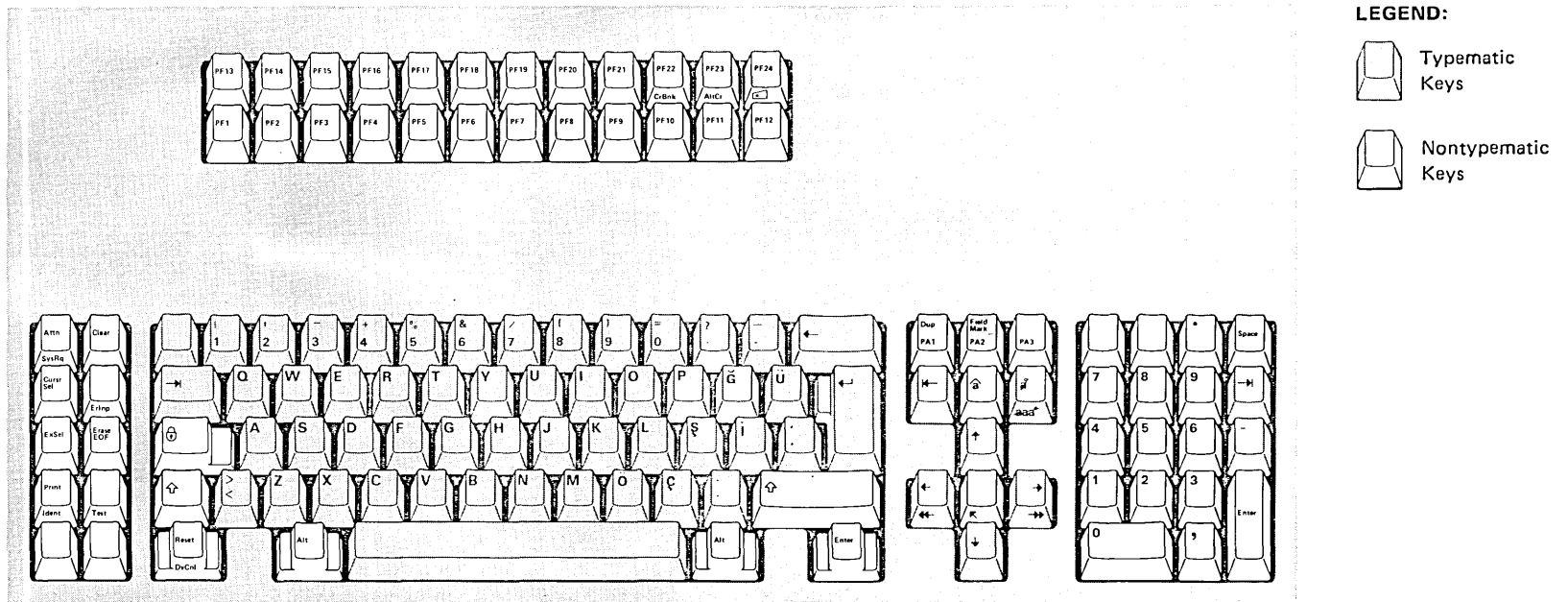


Typewriter Keyboard



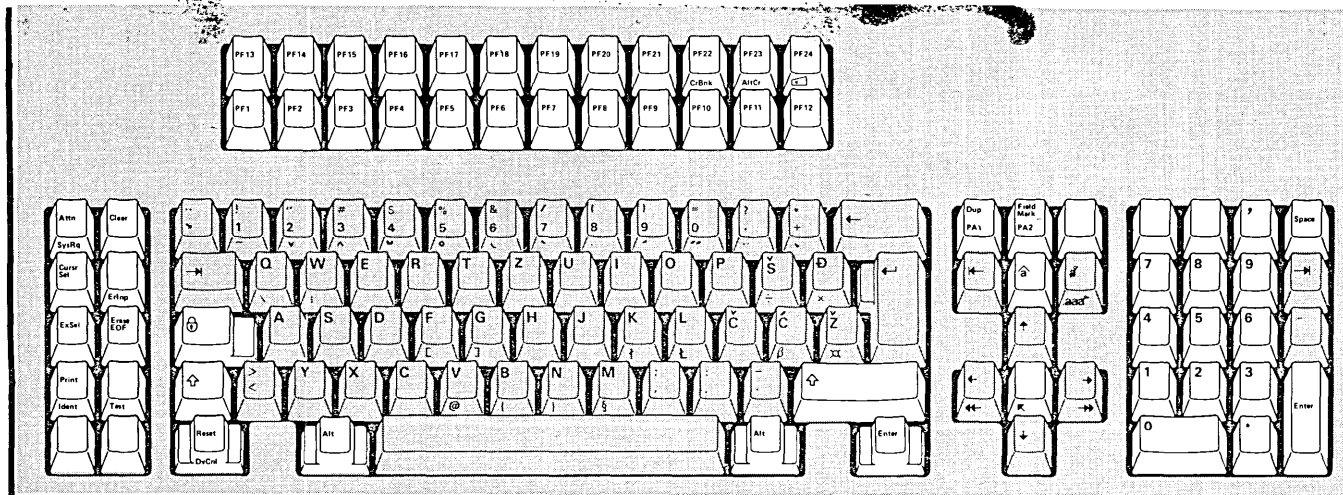
APL Accessory Layout

Figure 5-23. Swiss-German Extended Keyboards for 3179 Color Display Station (Not Supported by 3274 and 3276)



Typewriter Keyboard

Figure 5-24. Turkish Keyboard for 3179 Color Display Station (Not Supported by 3274 and 3276)



LEGEND:

Typematic
KeysNontypematic
Keys

Typewriter Keyboard

Figure 5-25. Yugoslav Keyboard for 3179 Color Display Station

Chapter 6. 3180 Display Station Keyboards

This chapter provides definitions and layouts for the 3180 Display Station keyboards.

Keyboard Definitions

Four modifiable keyboards are available for the 3180.

122-Key Typewriter/APL Keyboard: This keyboard has 48 data keys, 32 control keys, 24 program function keys at the top of the keyboard, and a numeric keypad section with 18 keys on the far-right side. The keyboard has modified keytops to allow entry of 81 APL specific characters in addition to the dual-case character set. An APL ON/OFF key is used to place the keyboard in typewriter or APL mode.

122-Key Data Entry Keyboard: This keyboard has 46 data keys, 34 control keys, 24 program function keys located in two rows across the top of the keyboard, and a numeric keypad section with 18 keys on the far-right side.

124-Key Japanese Katakana Typewriter/APL Keyboard: This keyboard, with 4-level shift, provides 50 data keys, 32 control keys, 24 program function keys at the top of the keyboard, and a numeric pad on the far-right side. The keyboard has modified keytops to allow entry of 81 APL specific characters in addition to the dual-case character set. An APL ON/OFF key is used to change the keyboard from the national language modes to APL.

124-Key Japanese Katakana Data Entry Keyboard: This keyboard has 48 data keys, 34 control keys, 24 program function keys at the top of the keyboard, and a numeric keypad section with 18 keys on the far-right side.

Two keyboard tables with standard layouts are provided with 3274 Configuration Support D, Release Level 63 or higher, or 3174 Configuration Support A: Typewriter and Data Entry. By modifying the keyboard tables in the control unit and moving the keycaps accordingly, the user can define four additional layouts to suit application requirements.

The 3180 can operate in two modes: emulation (Typewriter only) and native (Typewriter and Data Entry). In emulation mode, the 3180 display Typewriter keyboard emulates the 3278 Model 2 and 3279 Model S2B display stations. The 3180's 122-key keyboard operates like an 87-key Typewriter keyboard. To operate in emulation mode, the 3180 must be attached to a 3274 Control Unit with Configuration Support A, B, C, D, T, or P at the required release level, to a 3174 Subsystem Control Unit with Configuration Support A, or to a 3276 Control Unit Display Station.

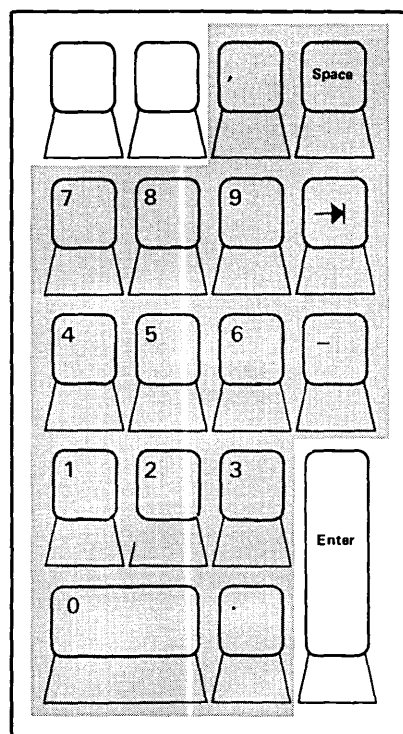
In native mode, depending on the Setup switch settings, the keyboard is defined as one of the standard keyboard layouts (Typewriter or Data Entry), or any of four unique layouts defined by using the Keyboard Definition Utility. Four of the six keyboard layouts (standard plus unique) may be selected during customizing. To operate in native mode, the 3180 must be attached to a 3274 equipped with Configuration Support D, Release Level 63 or higher, or to a 3174 with Configuration Support A. The 3276 does not support native mode.

- Two operational keypads—the data entry and program function keypads—are available through modification of the standard National Language Numeric Keypad (shown in Figures 6-2 through 6-25) or during customization of the 3274 Control Unit. Comma and period keytops sometimes switch positions on the three keypads, depending on the national language. (See Figure 6-1.)

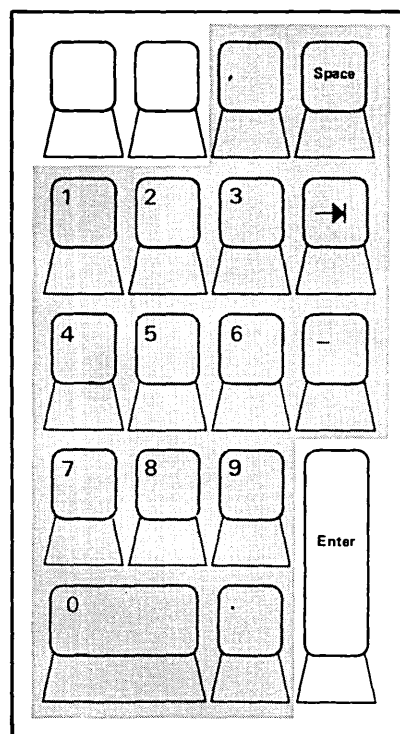
Most keys have removable keycaps that are interchangeable with other keycaps. Other keycap accessories are available.

Keyboard Layouts

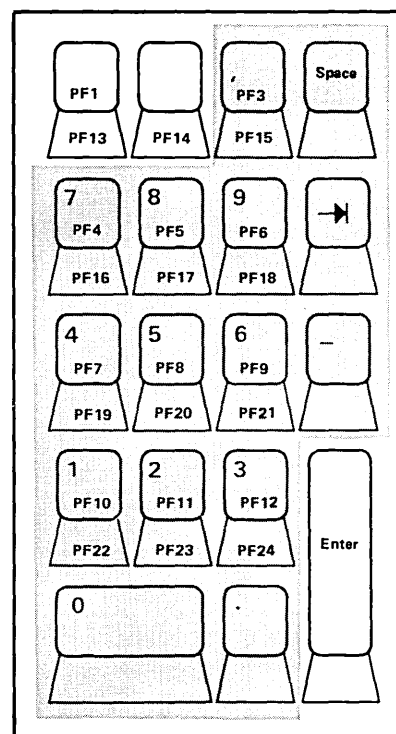
- Figures 6-1 through 6-25 illustrate the 3180 keyboard and keypad layouts for the various national languages.



National Language Numeric Keypad^{1, 2}



Data Entry Keypad¹



Program Function Keypad¹

LEGEND:



Typematic
Keys

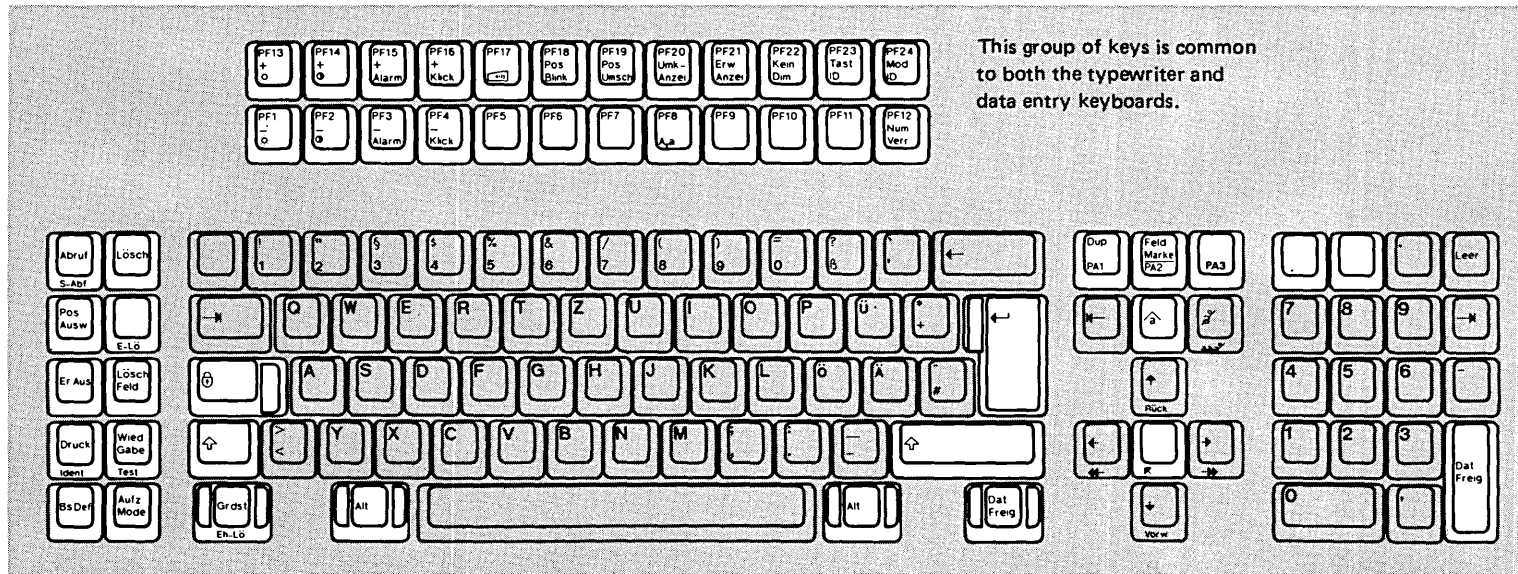
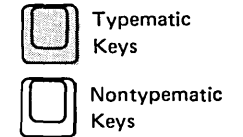
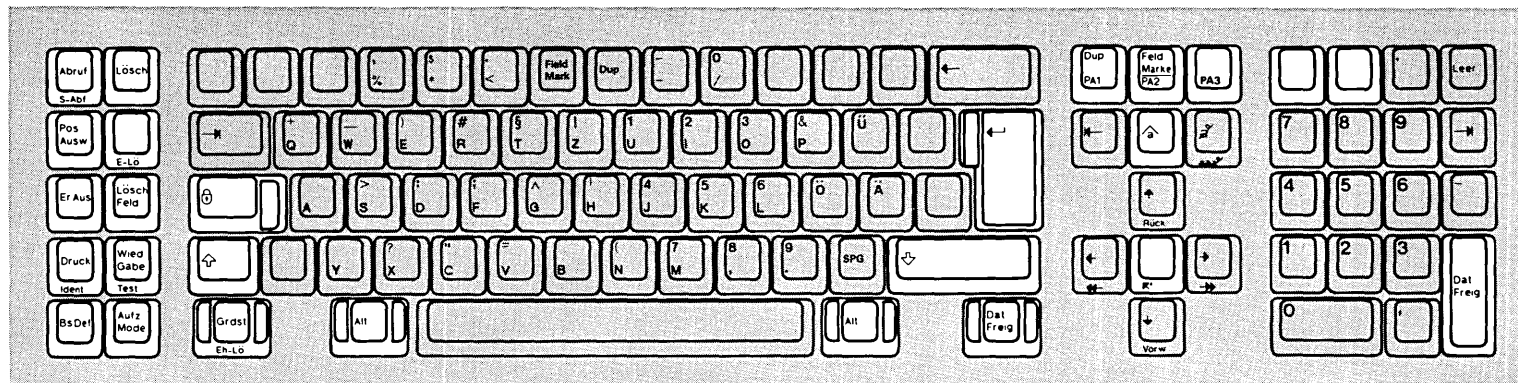
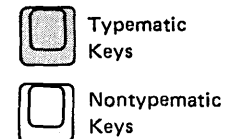


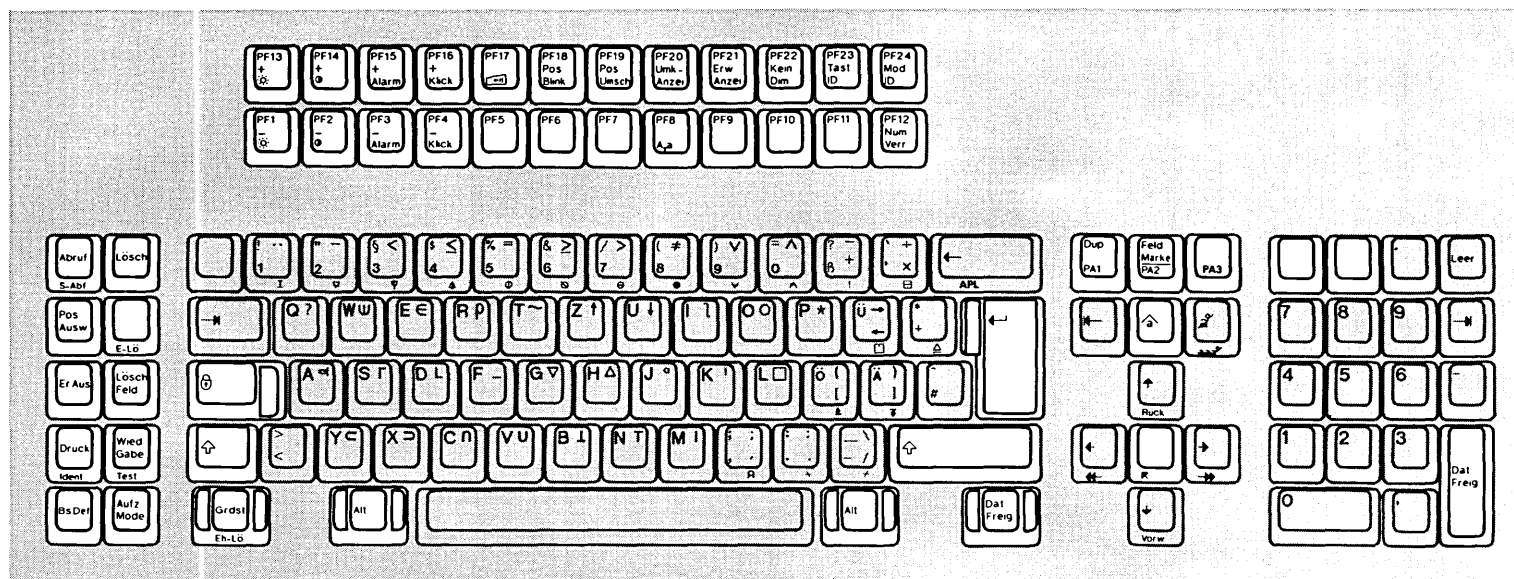
Nontypematic
Keys

¹ The period and comma keytops switch positions on each keypad for the following languages: Austrian/German, Belgian, Danish, Finnish/Swedish, French AZERTY, Italian, Norwegian, Portuguese, Spanish-Speaking, Swiss-French, and Swiss-German. Canadian-French, English (U.K.), English (U.S.), and Japanese Katakana have the standard keypad layouts.

² In emulation mode, the numeric keypad will not operate in uppercase.

Figure 6-1. 3180 Display Station Keypads (English [U.S.])

**LEGEND:****Typewriter Keyboard****LEGEND:****Data Entry Keyboard****Figure 6-2 (Part 1 of 2). Austrian/German Keyboards for 3180 Display Station**

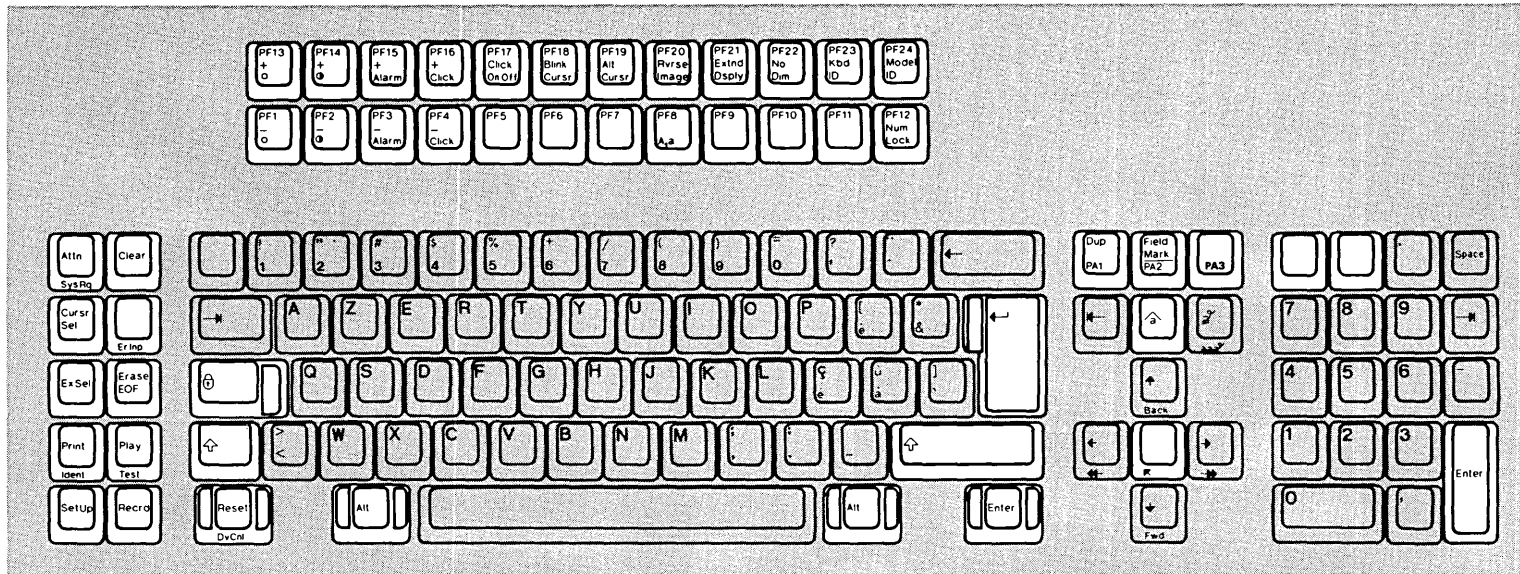
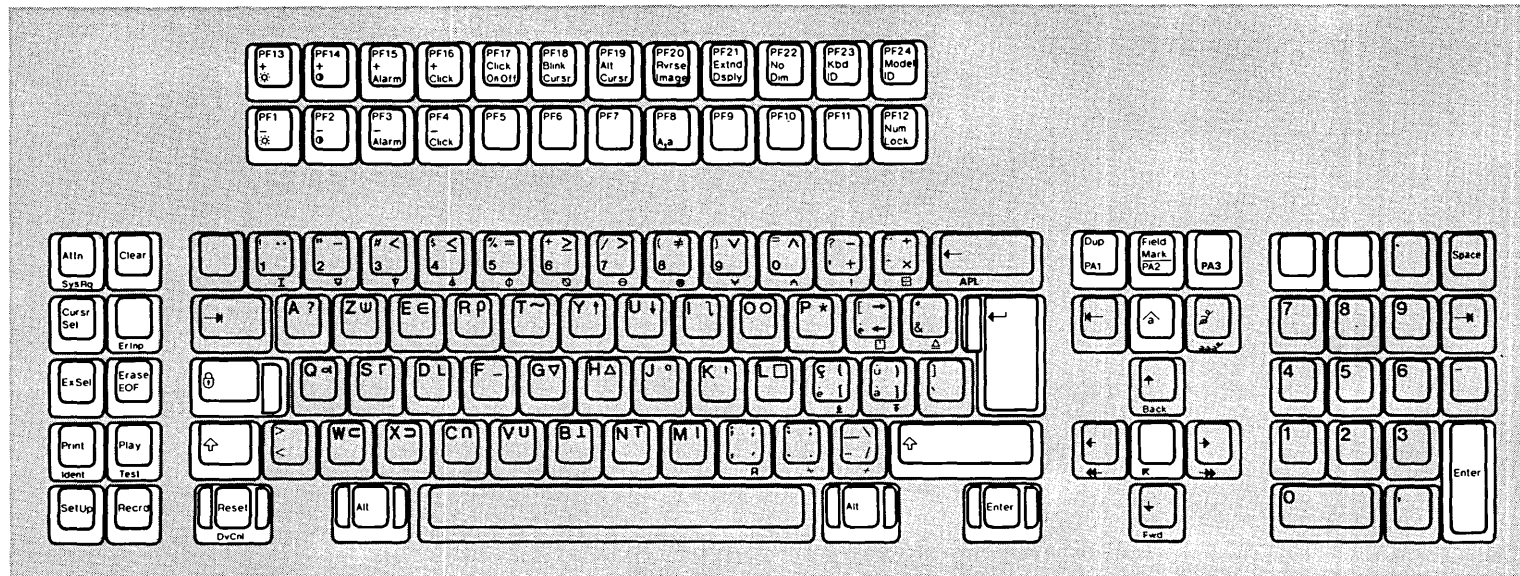


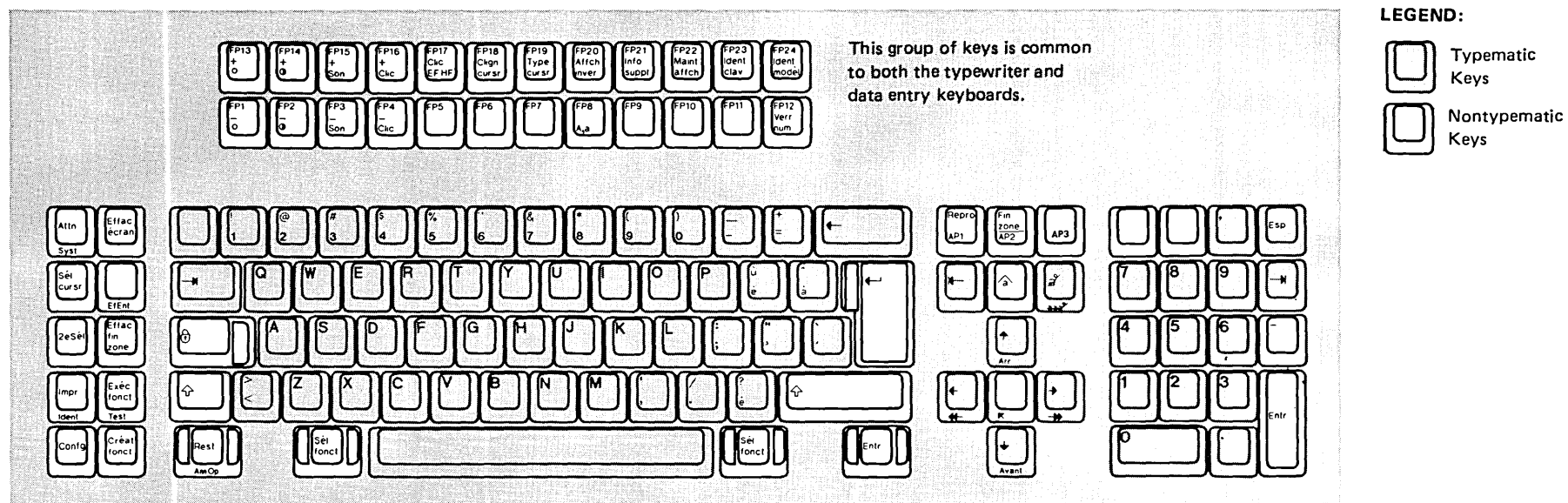
LEGEND:

- Typematic Keys
- Nontypematic Keys

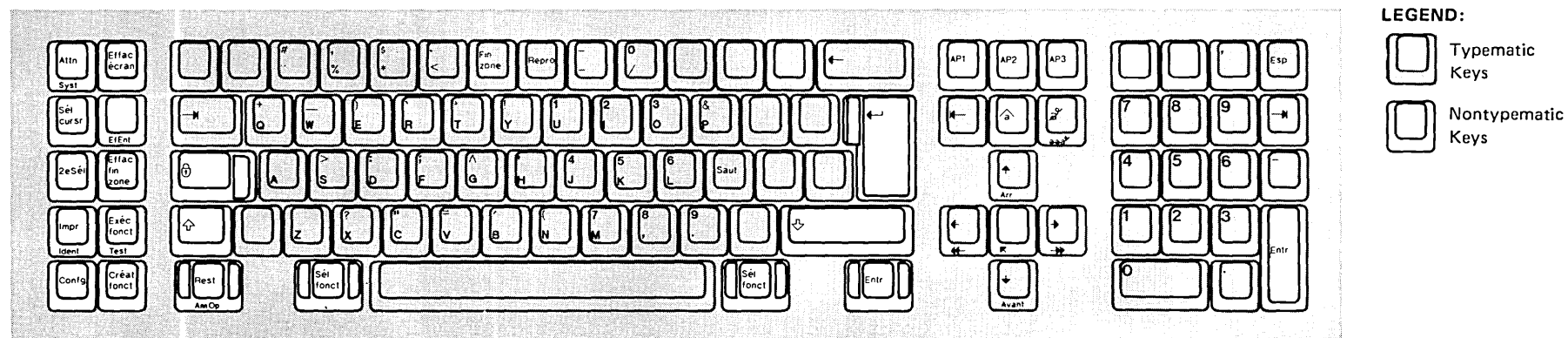
APL Keyboard

Figure 6-2 (Part 2 of 2). Austrian/German Keyboards for 3180 Station

**LEGEND:**Typematic
KeysNontypematic
Keys**Typewriter Keyboard****LEGEND:**Typematic
KeysNontypematic
Keys**APL Keyboard****Figure 6-3. Belgian Keyboards for 3180 Display Station**

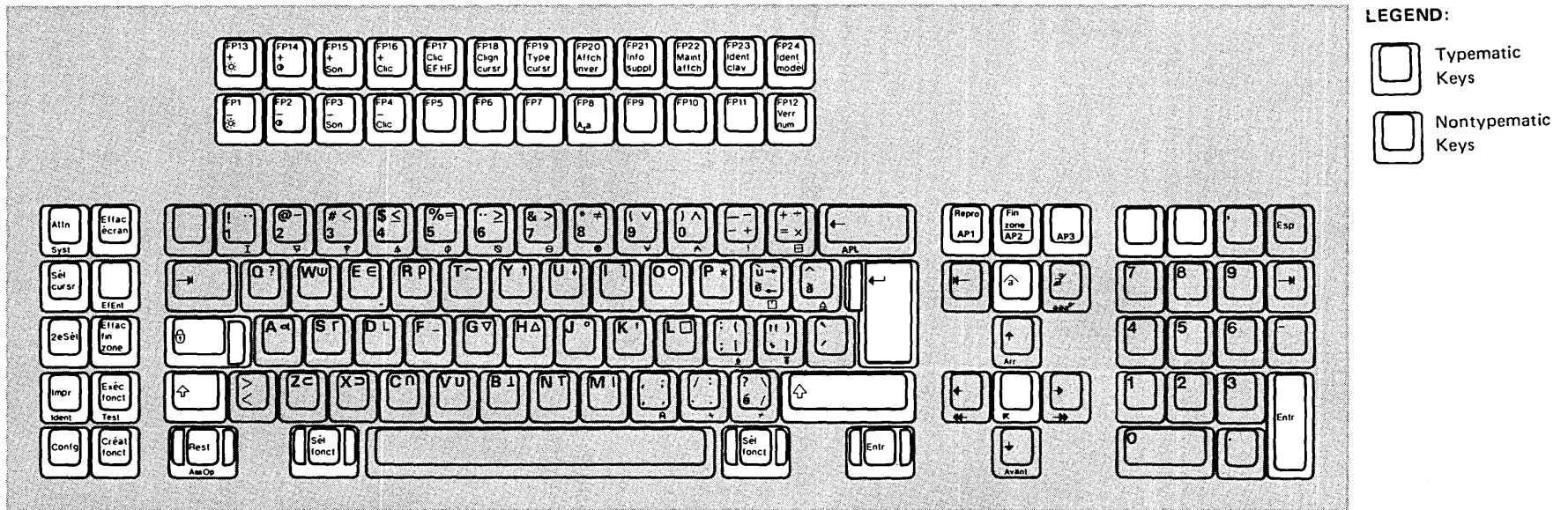


Typewriter Keyboard



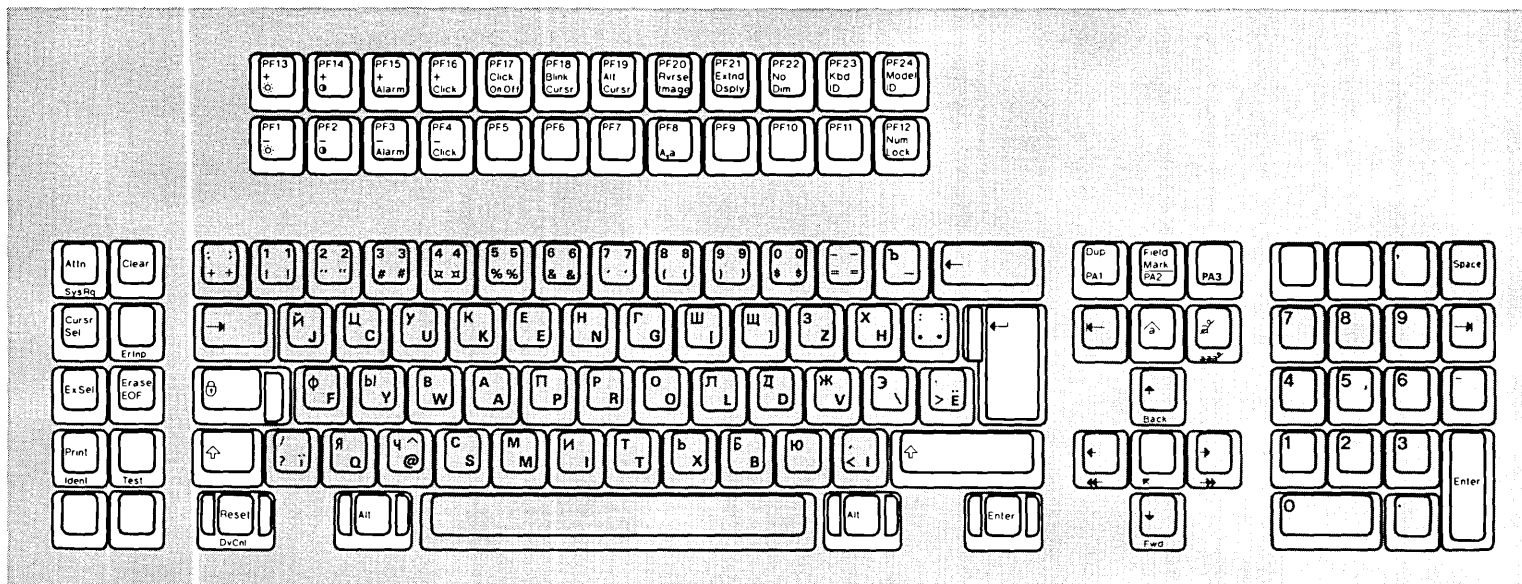
Data Entry Keyboard

Figure 6-4 (Part 1 of 2). Canadian-French Keyboards for 3180 Display Station





APL Keyboard

Figure 6-4 (Part 2 of 2). Canadian-French Keyboards for 3180 Display Station



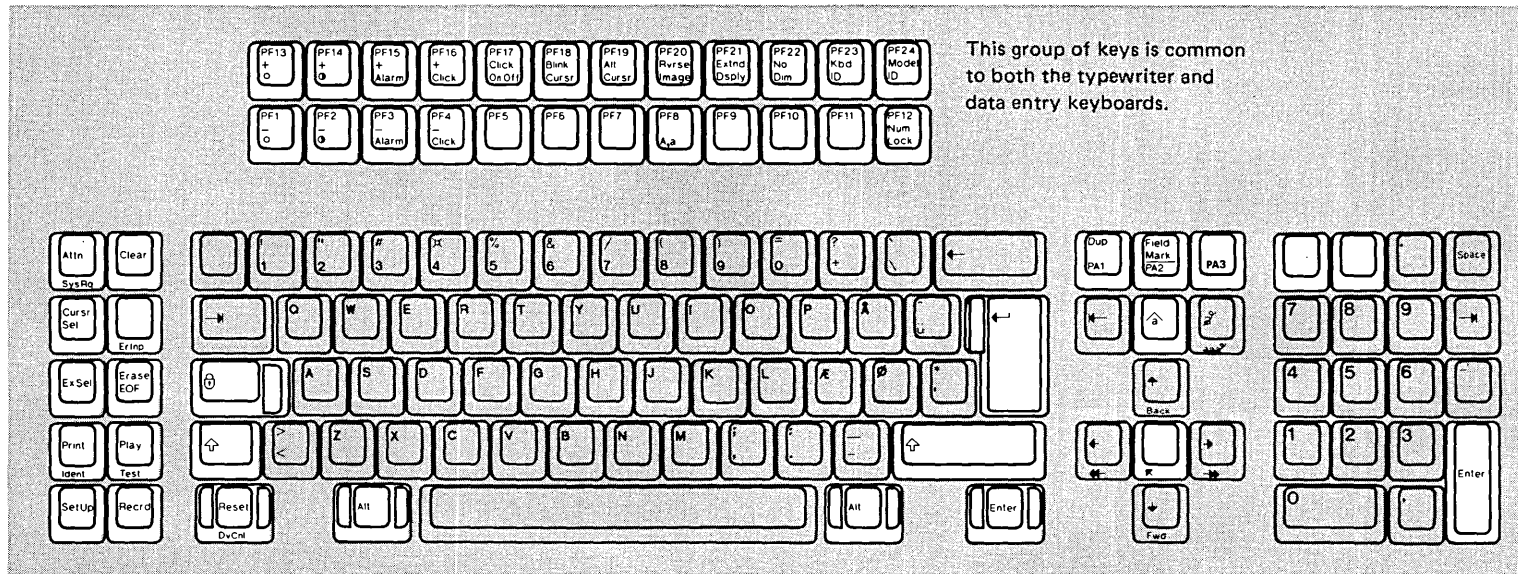
LEGEND:

-  Typematic Keys
-  Nontypematic Keys

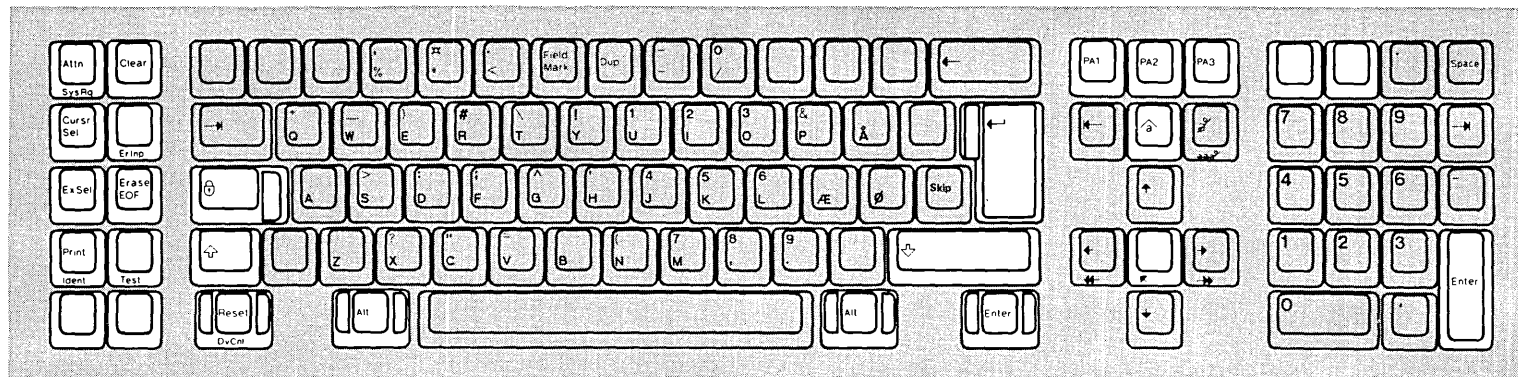
Typewriter Keyboard

Note: The Cyrillic keyboard is a 3180 Display Station RPQ item.

Figure 6-5. Cyrillic Keyboard for 3180 Display Station (Not Supported by 3274 and 3276)

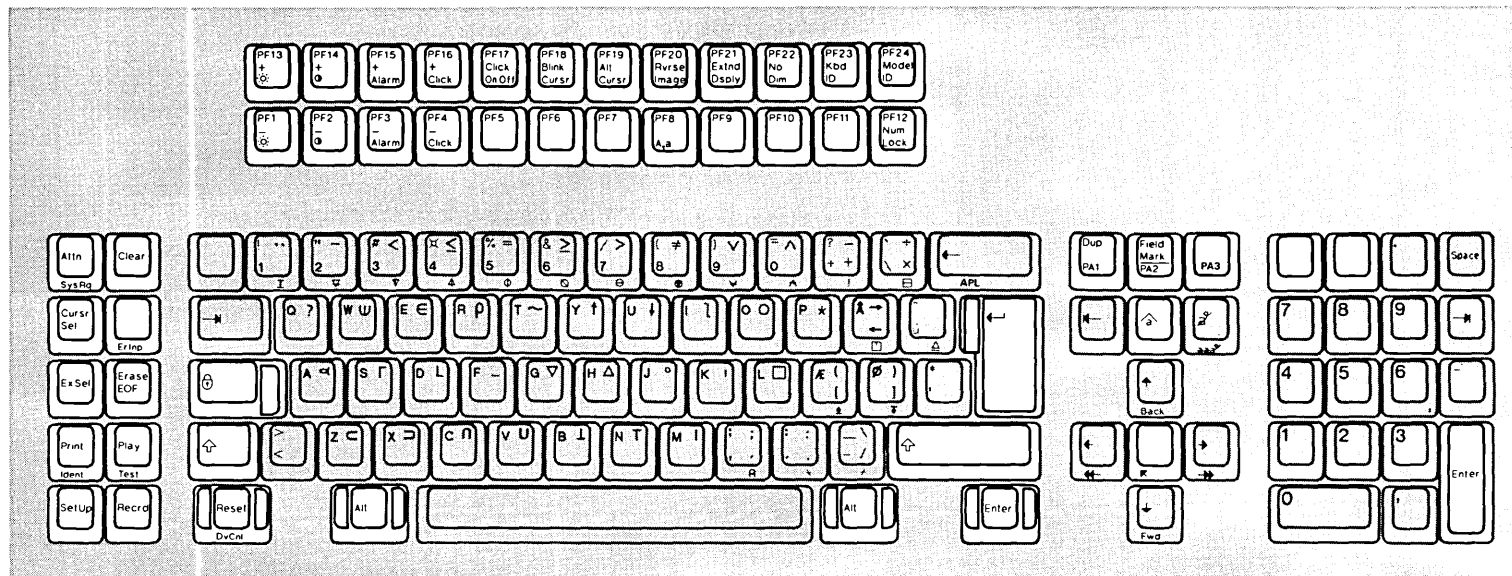


Typewriter Keyboard



Data Entry Keyboard

Figure 6-6 (Part 1 of 2). Danish Keyboards for 3180 Display Station

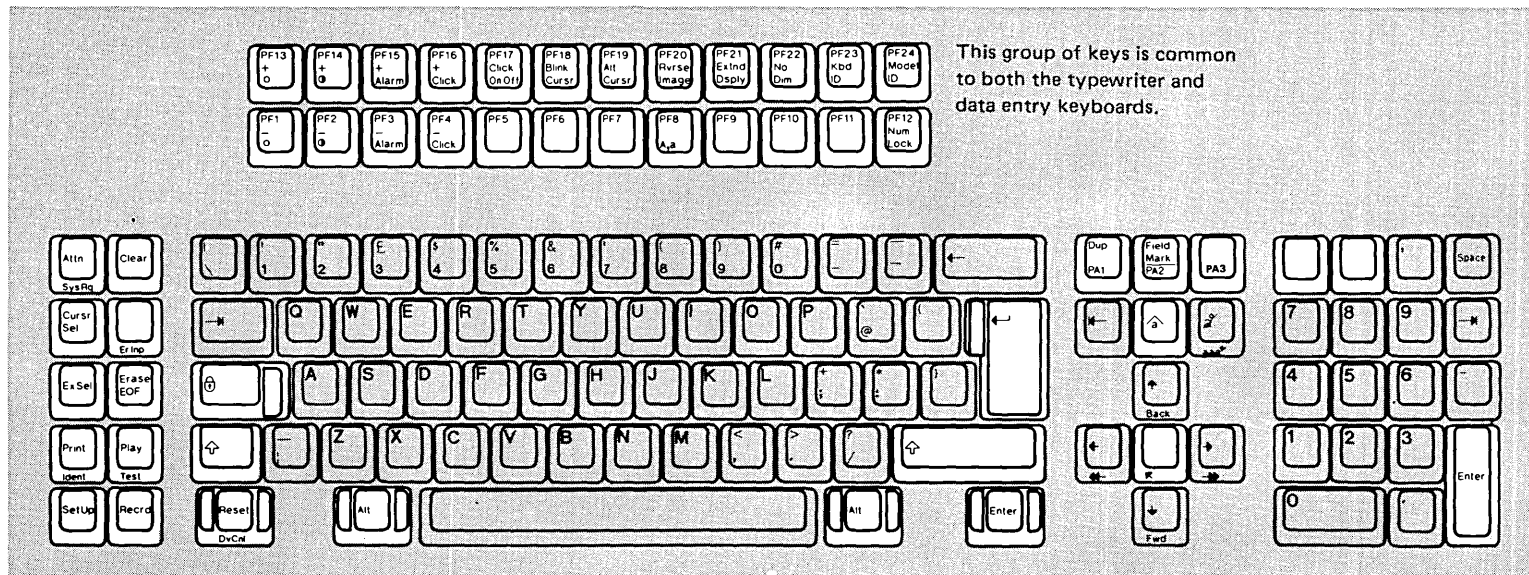


LEGEND:

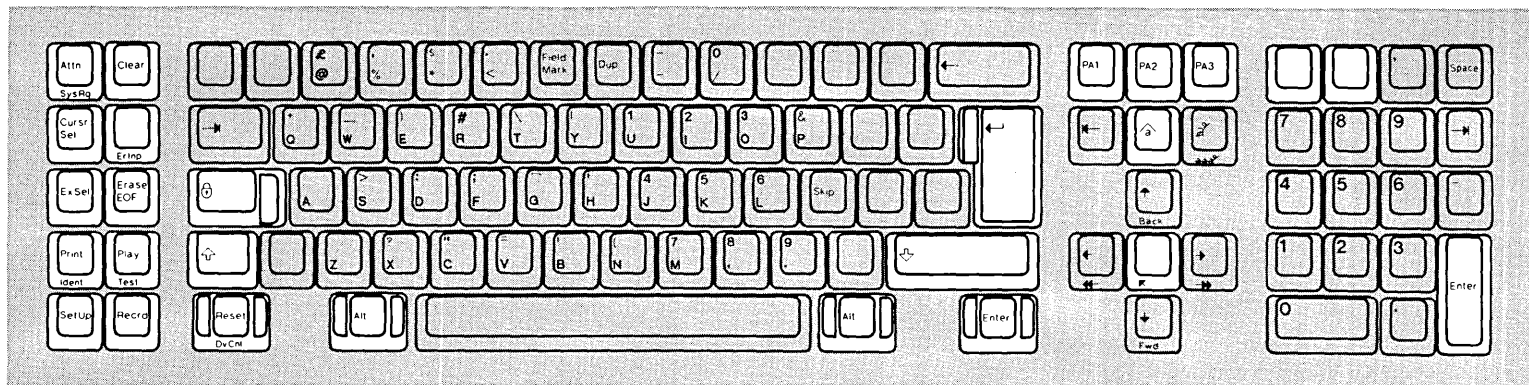
- Typematic Keys
- Nontypematic Keys

APL Keyboard

Figure 6-6 (Part 2 of 2). Danish Keyboards for 3180 Display Station

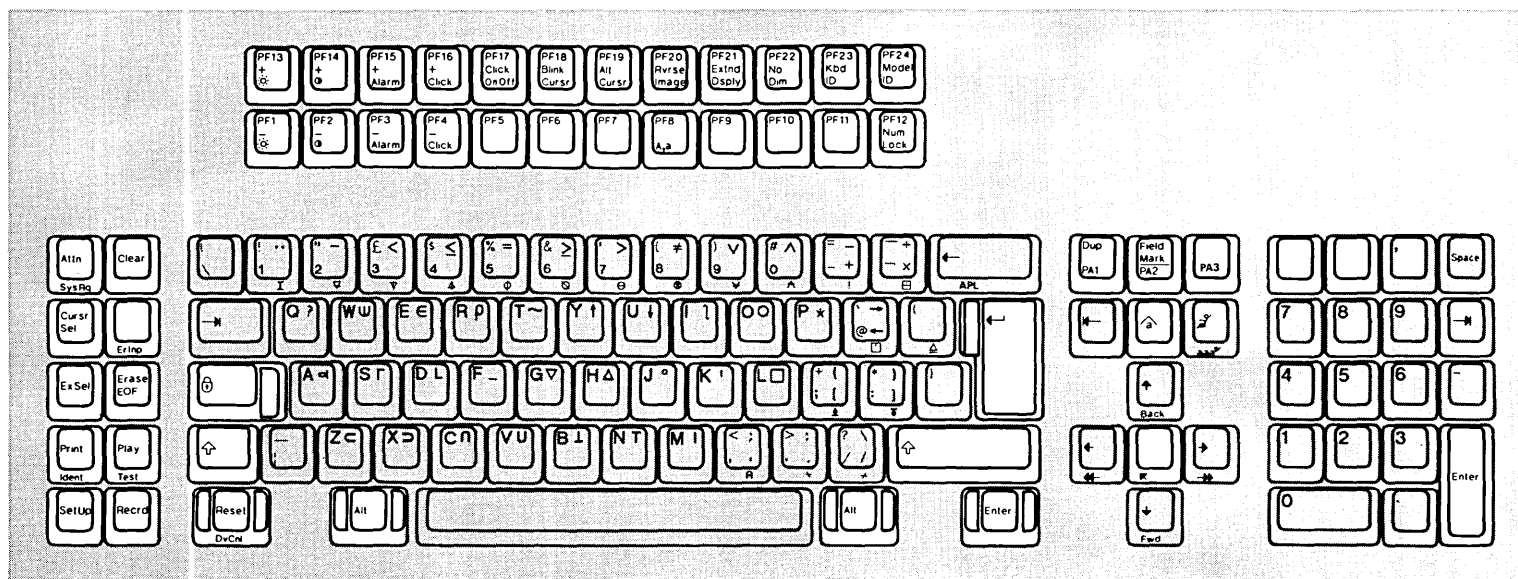


Typewriter Keyboard



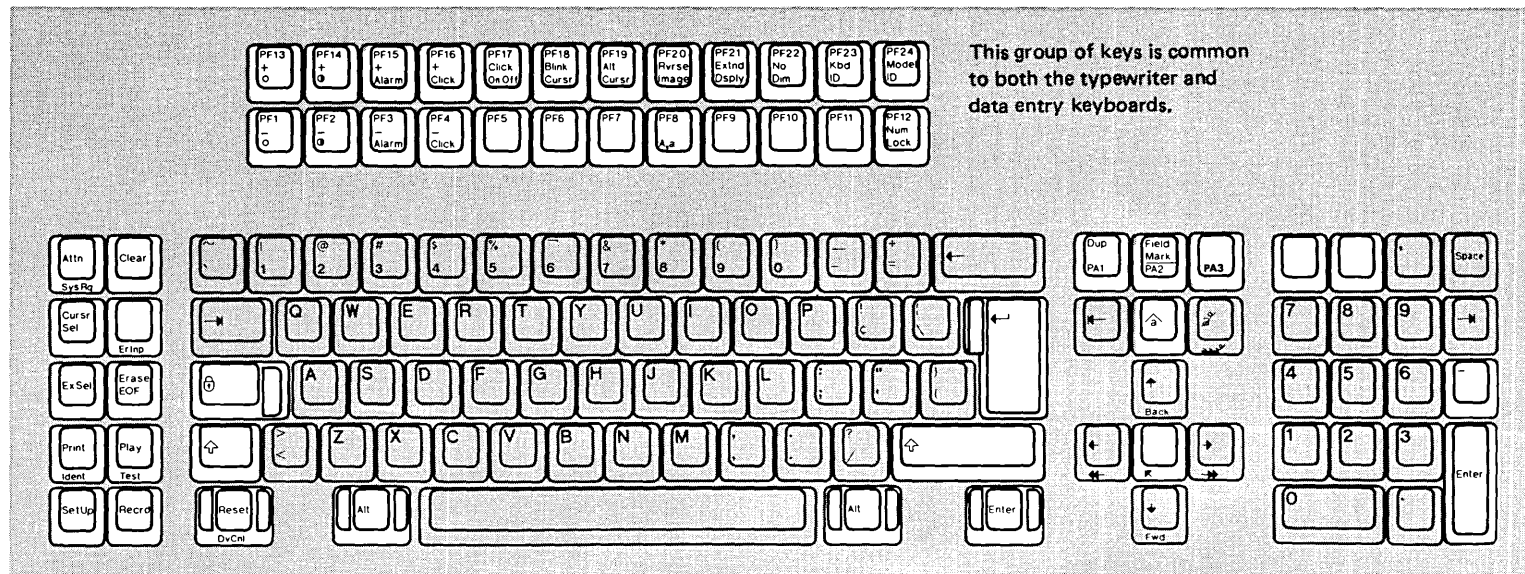
Data Entry Keyboard

Figure 6-7 (Part 1 of 2). English (U.K.) Keyboards for 3180 Display Station

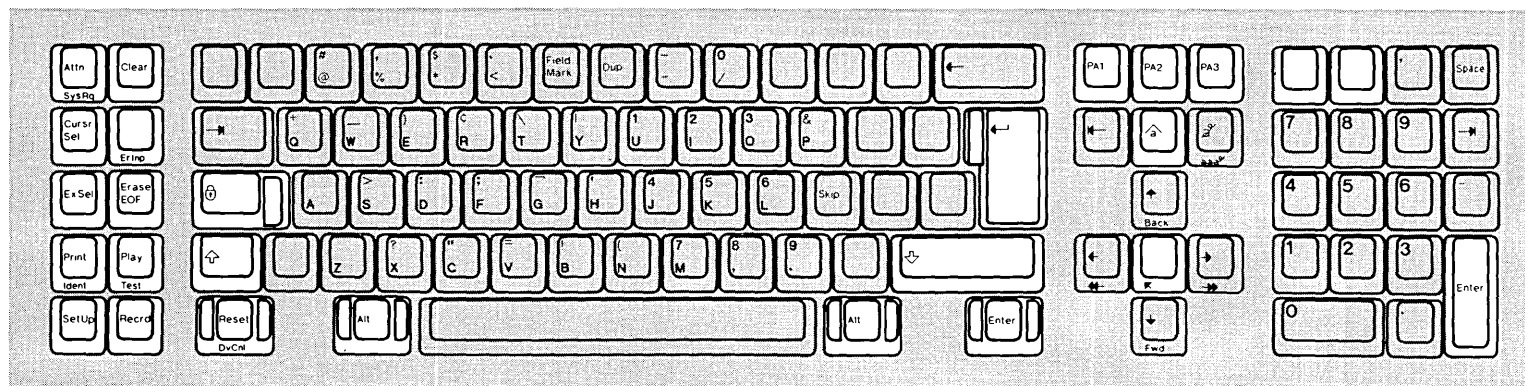


APL Keyboard

Figure 6-7 (Part 2 of 2). English (U.K.) Keyboards for 3180 Display Station

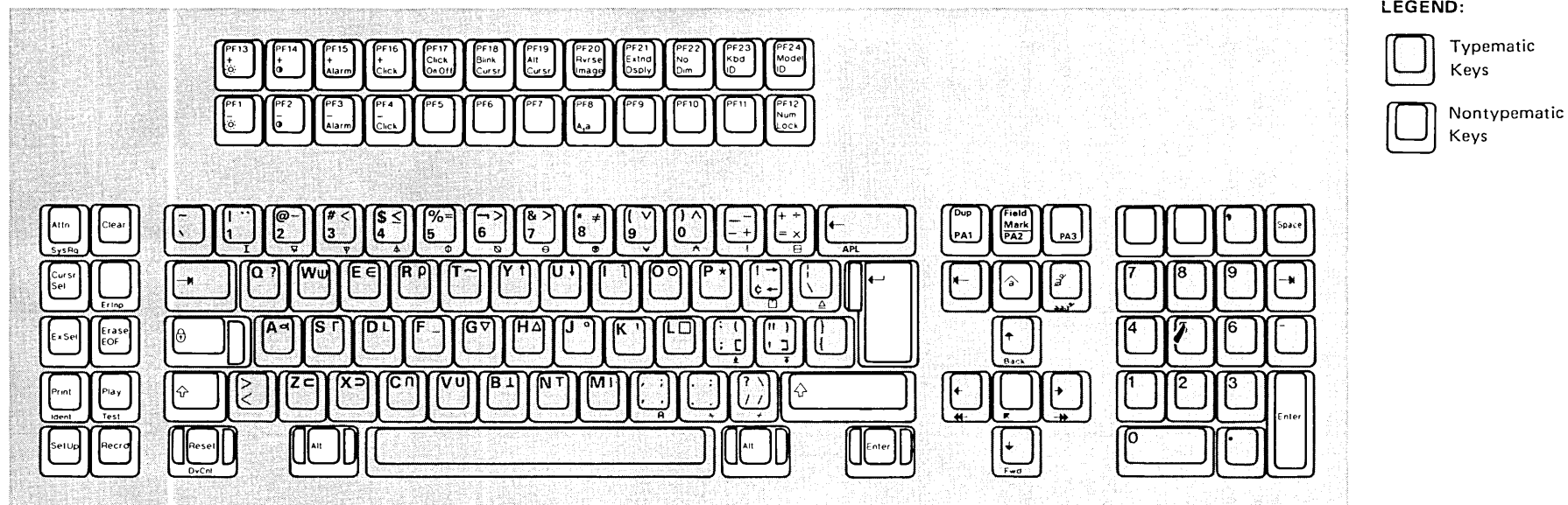


Typewriter Keyboard

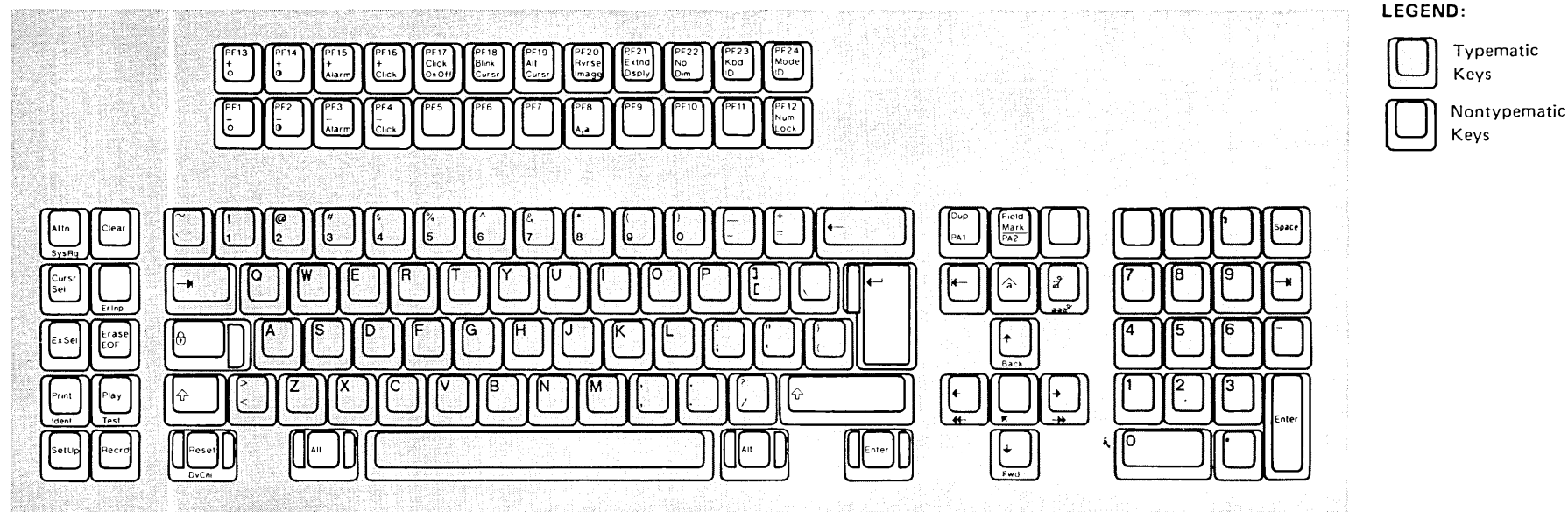


Data Entry Keyboard

Figure 6-8 (Part 1 of 2). English (U.S.) Keyboards for 3180 Display Station

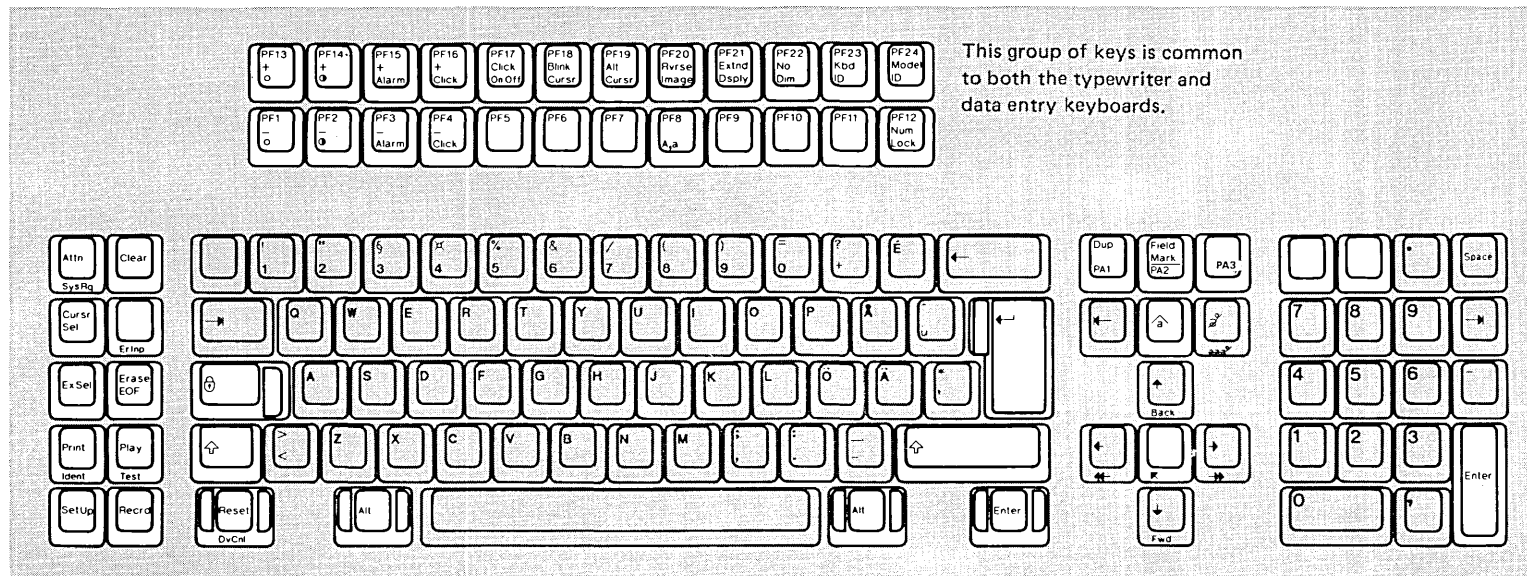


APL Keyboard

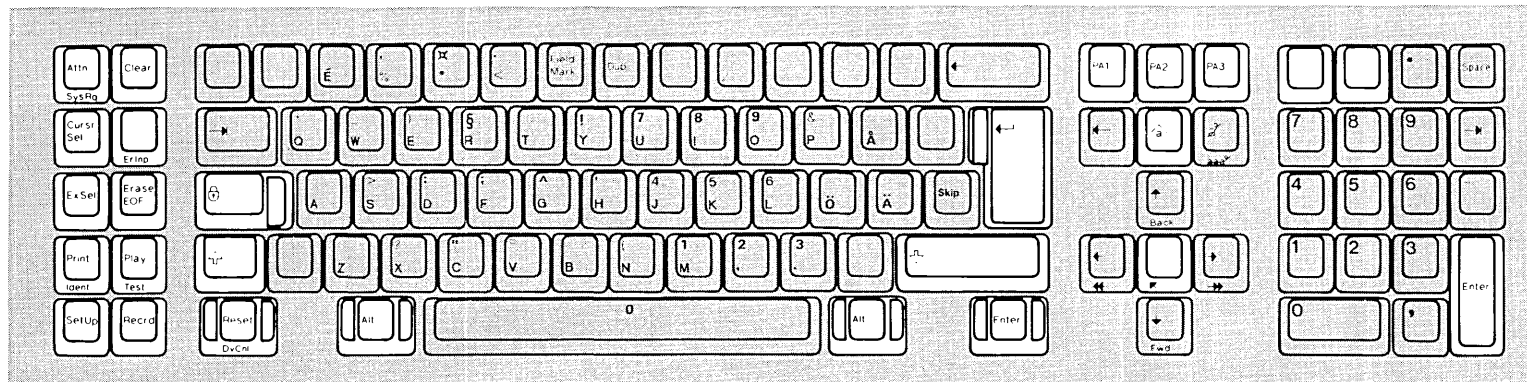


ASCII Keyboard

Figure 6-8 (Part 2 of 2). English (U.S.) Keyboards for 3180 Display Station

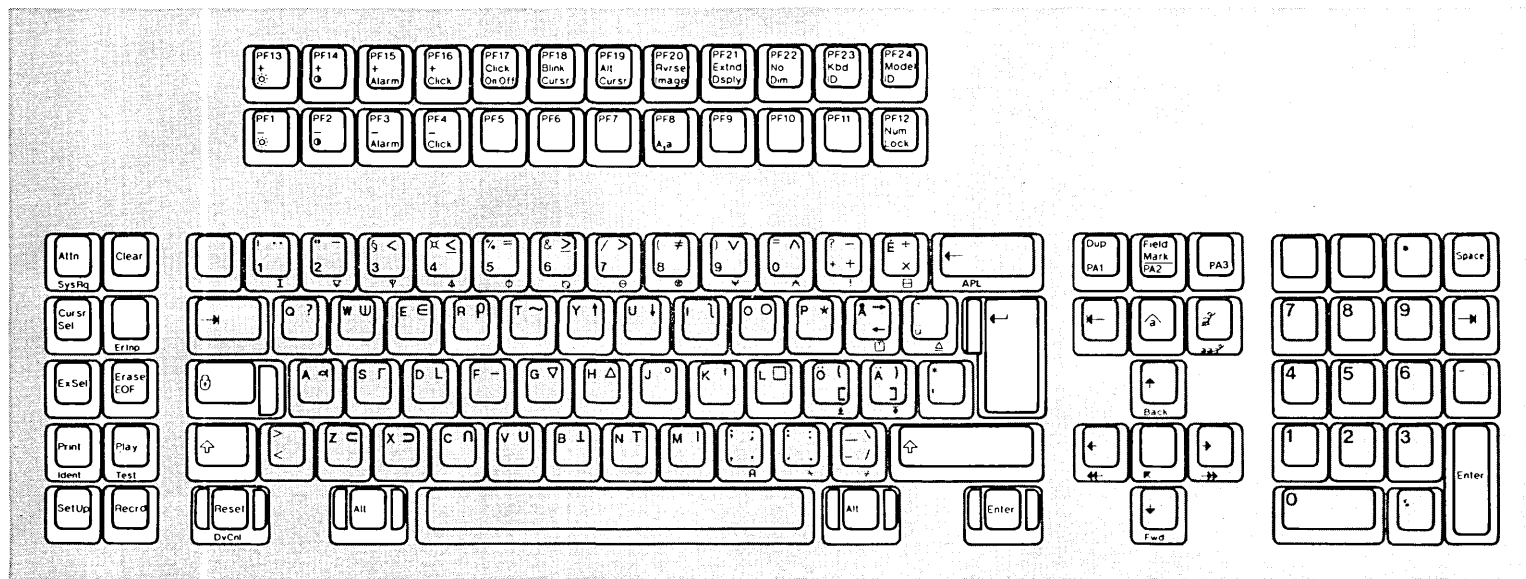


Typewriter Keyboard



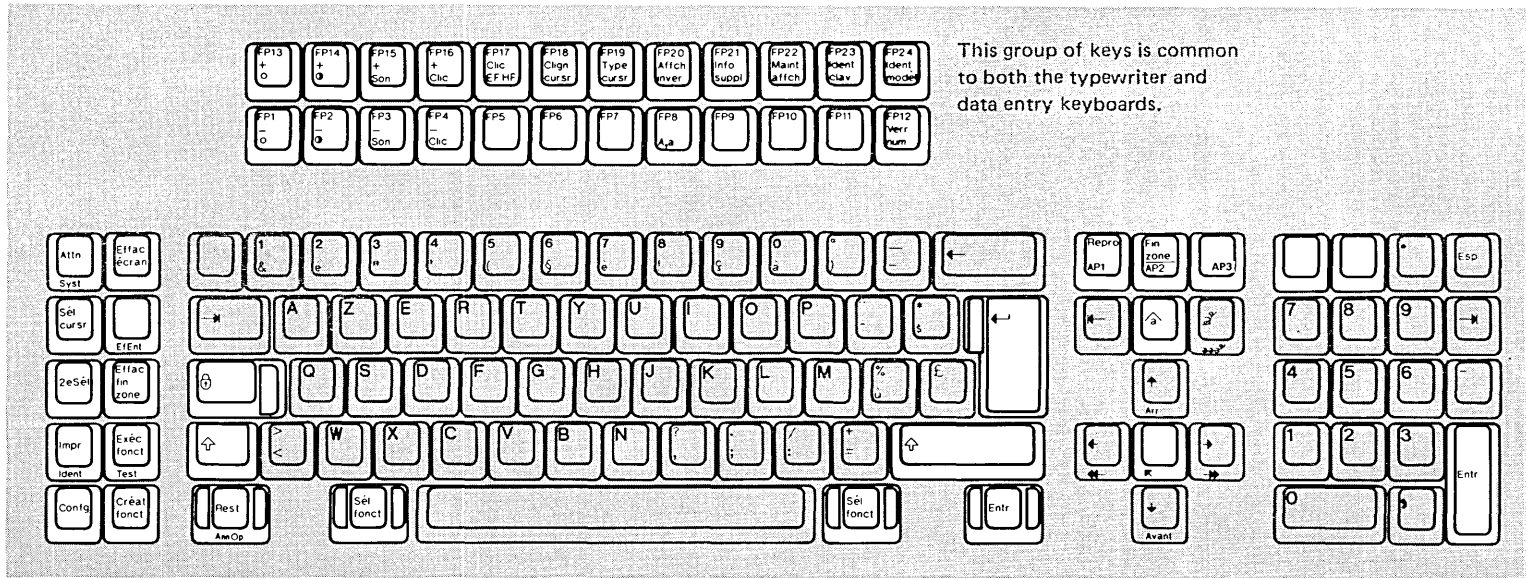
Data Entry Keyboard

Figure 6-9 (Part 1 of 2). Finnish/Swedish Keyboards for 3180 Display Station

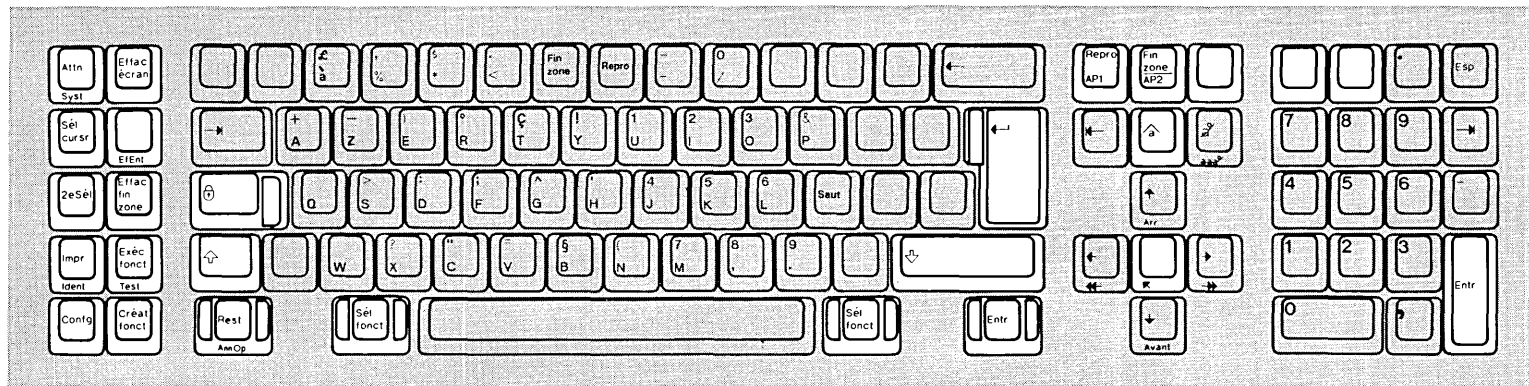


APL Keyboard

Figure 6-9 (Part 2 of 2). Finnish/Swedish Keyboards for 3180 Display Station





Typewriter Keyboard (native mode only)

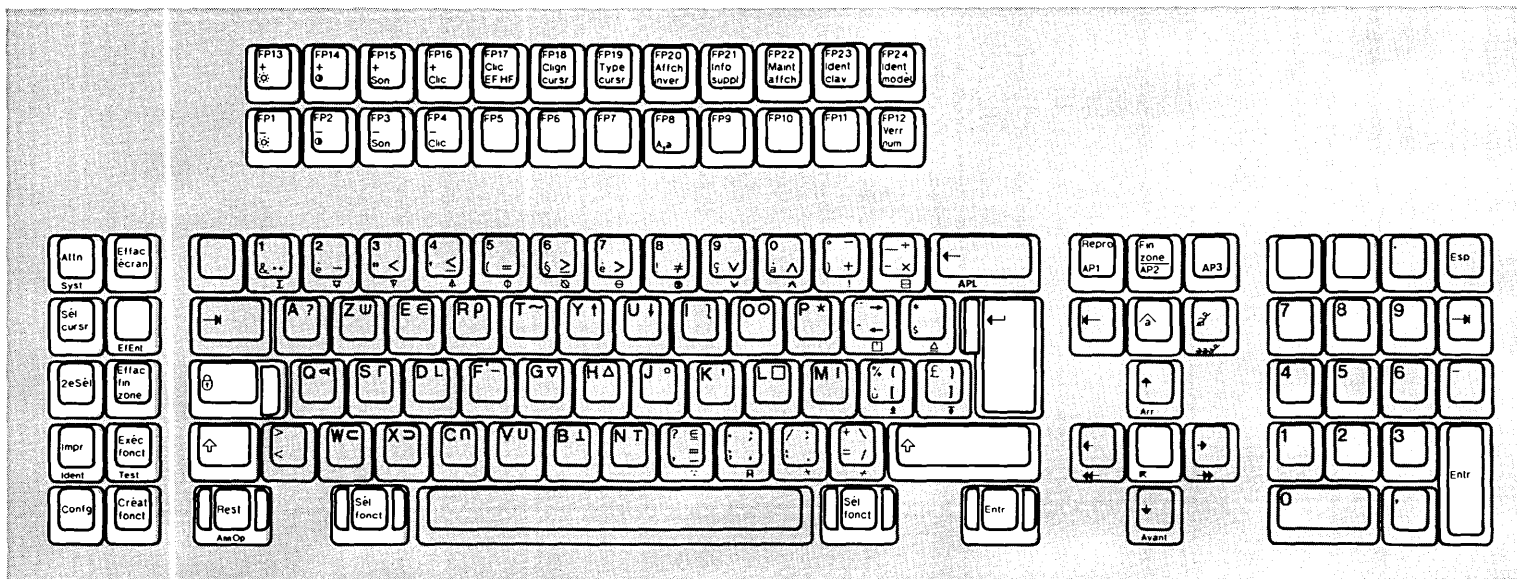


Data Entry Keyboard



Figure 6-10 (Part 1 of 2). French (AZERTY) Keyboards for 3180 Display Station

LEGEND:

-  Typematic Keys
 Nontypematic Keys



LEGEND:

-  Typematic Keys
-  Nontypematic Keys

APL Keyboard

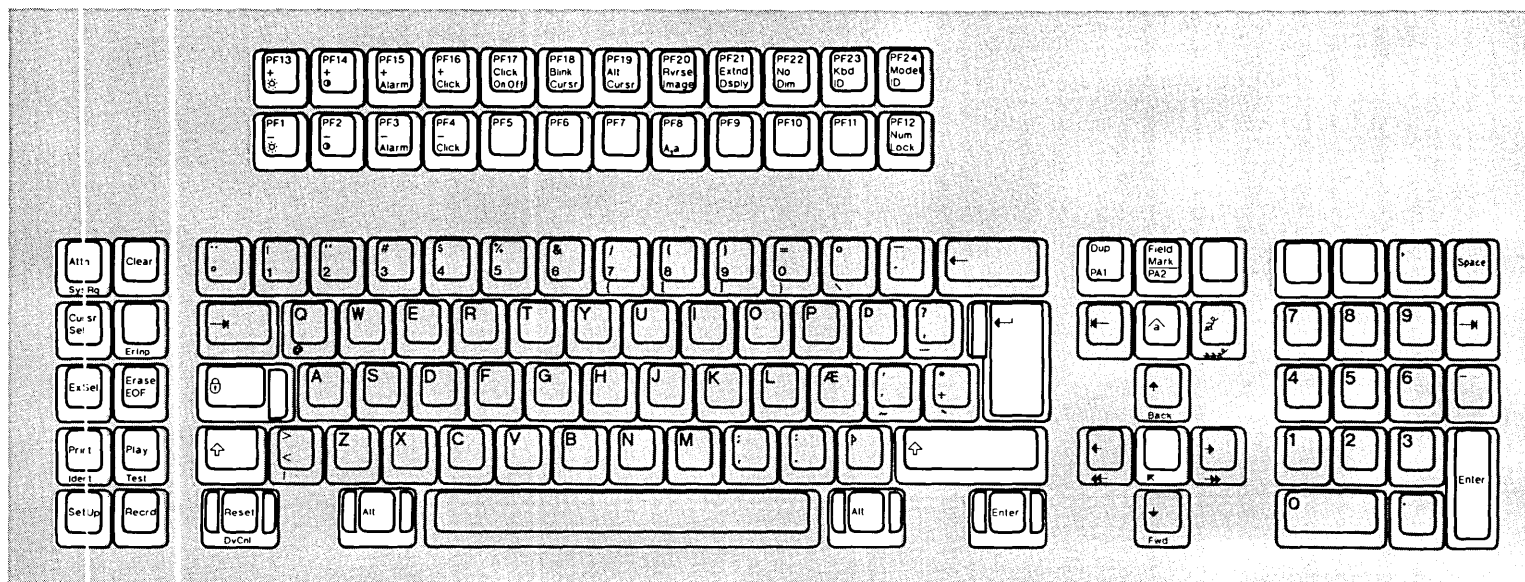
Figure 6-10 (Part 2 of 2). French (AZERTY) Keyboards for 3180 Display Station

Note: The Greek keyboard is a 3180 Display Station RPO item.

Figure 6-11. Greek Keyboard for 3180 Display Station (Not Supported by 3274 and 3276)

LEGEND:

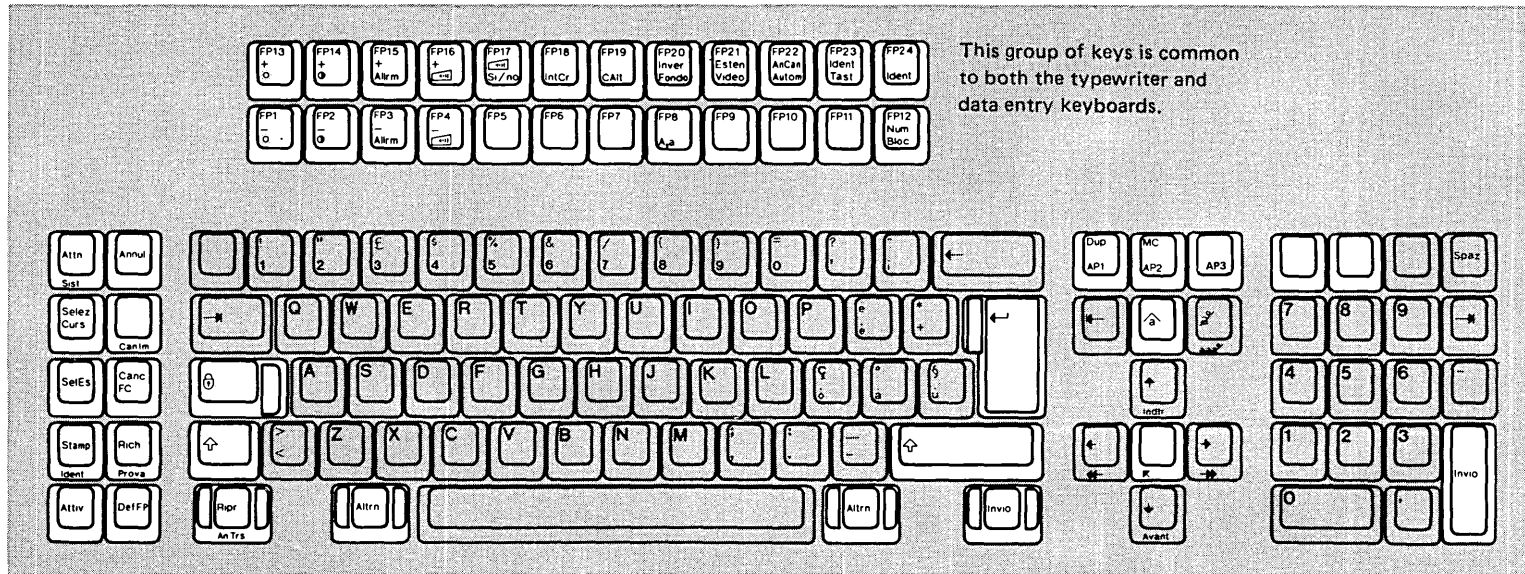
-



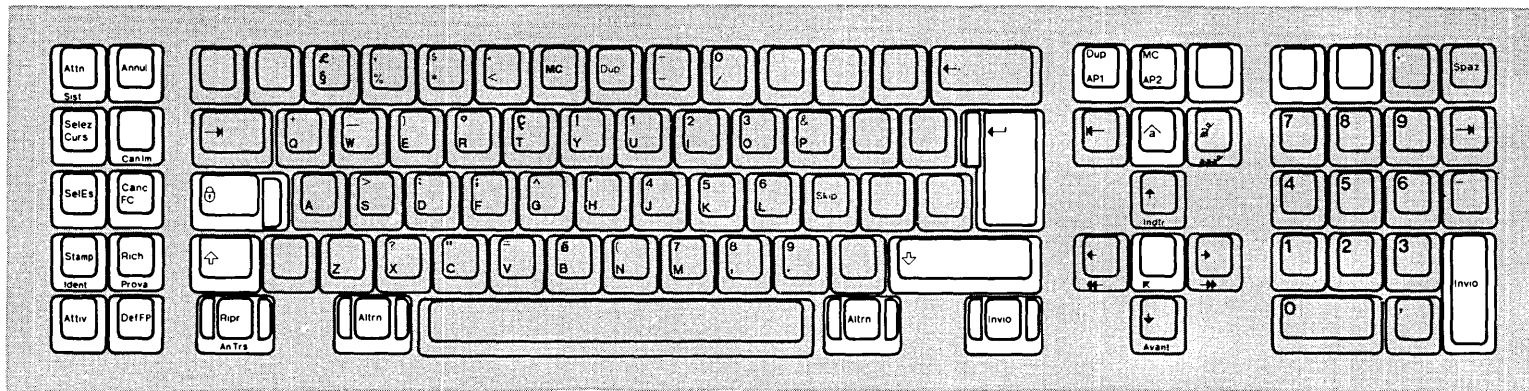
Typewriter Keyboard

Note: The Icelandic keyboard is a 3180 Display Station RPQ item.

Figure 6-12. Icelandic Keyboard for 3180 Display Station (Not Supported by 3274 and 3276)

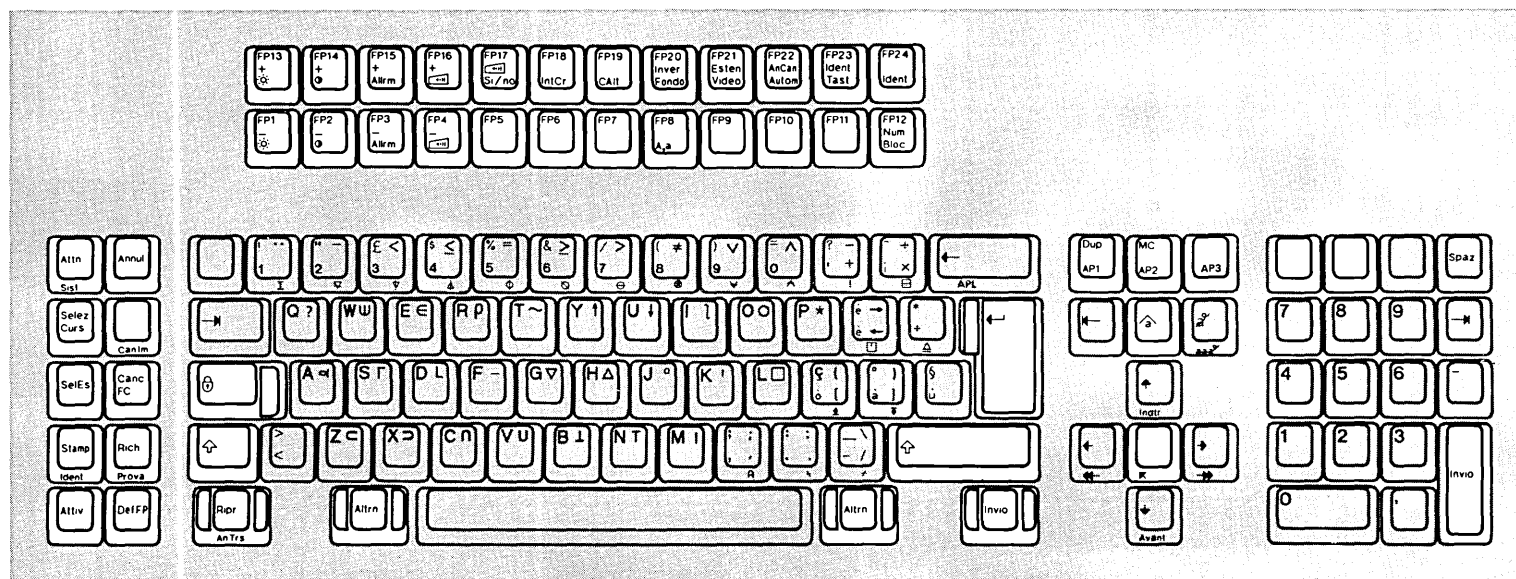


Typewriter Keyboard





Data Entry Keyboard

Figure 6-13 (Part 1 of 2). Italian Keyboards for 3180 Display Station

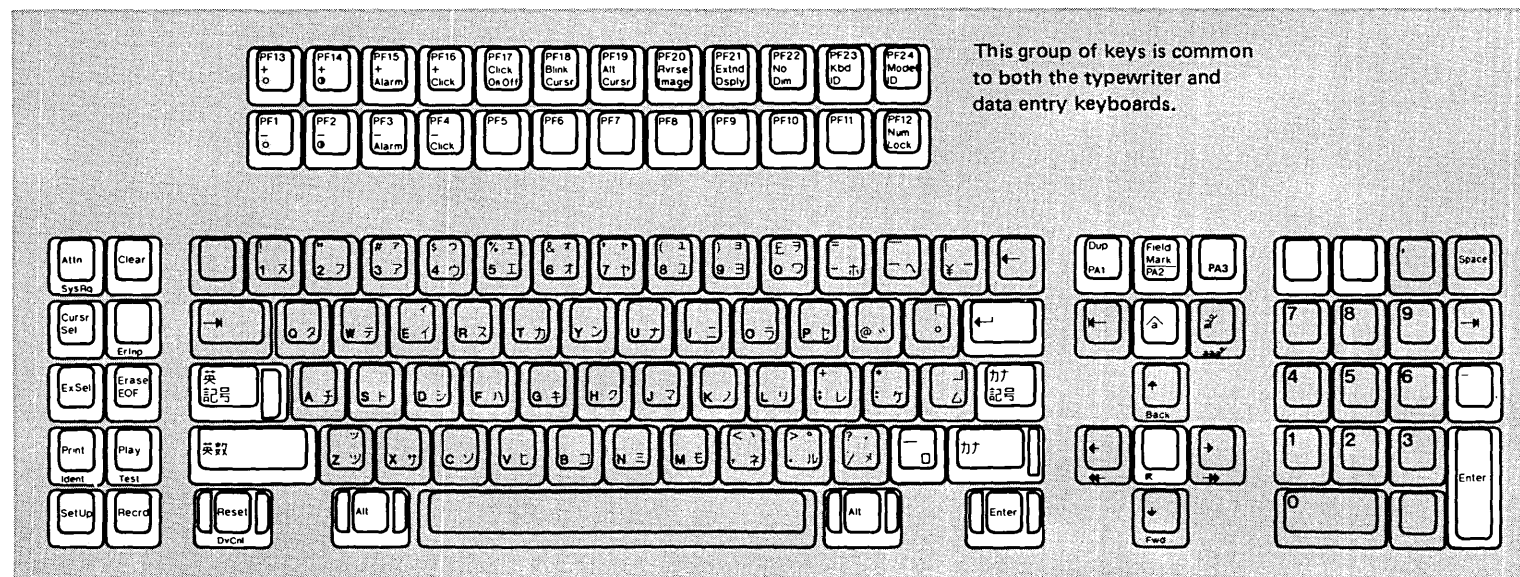


LEGEND:

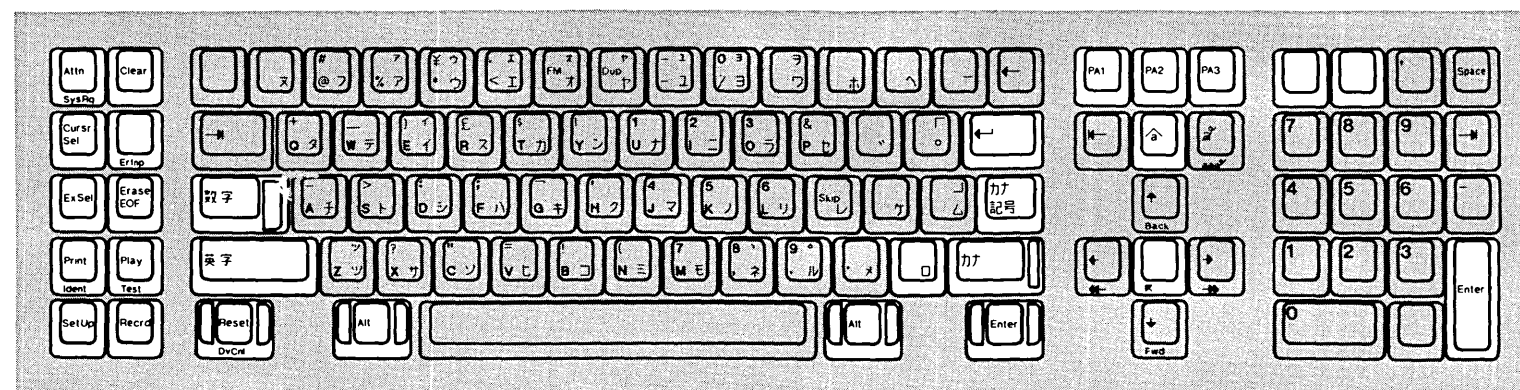
-  Typematic Keys
-  Nontypematic Keys

APL Keyboard

Figure 6-13 (Part 2 of 2). Italian Keyboards for 3180 Display Station

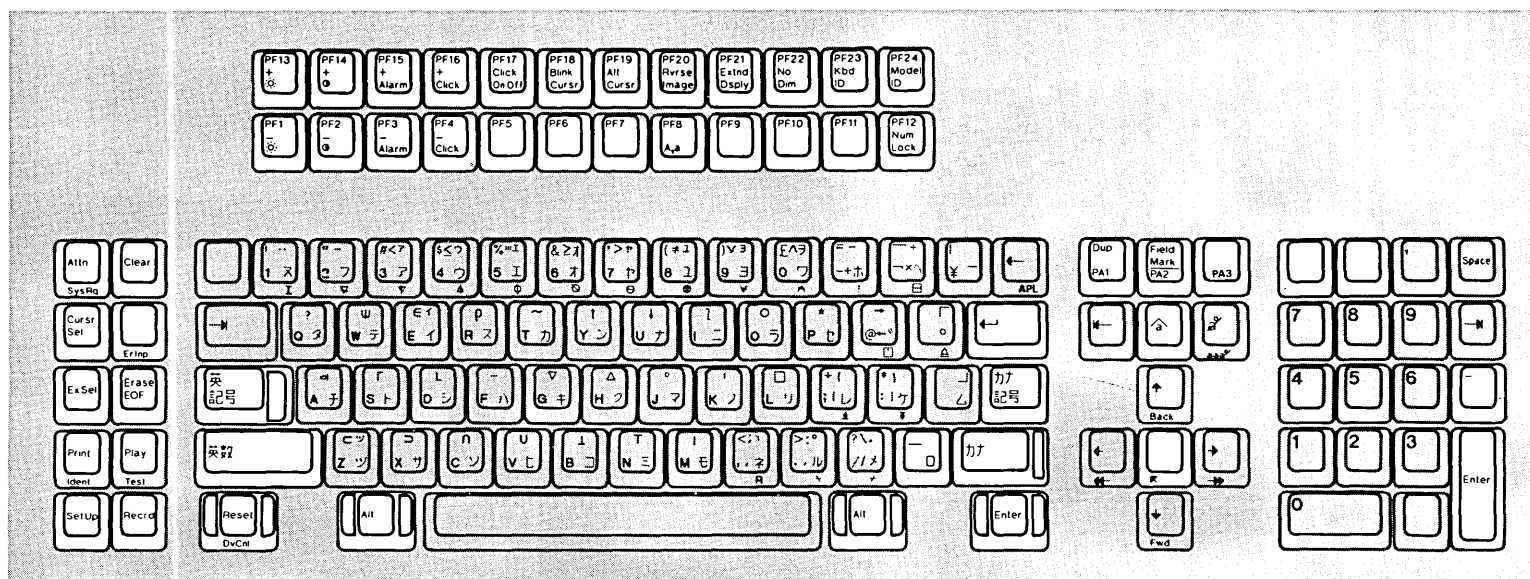


Typewriter Keyboard



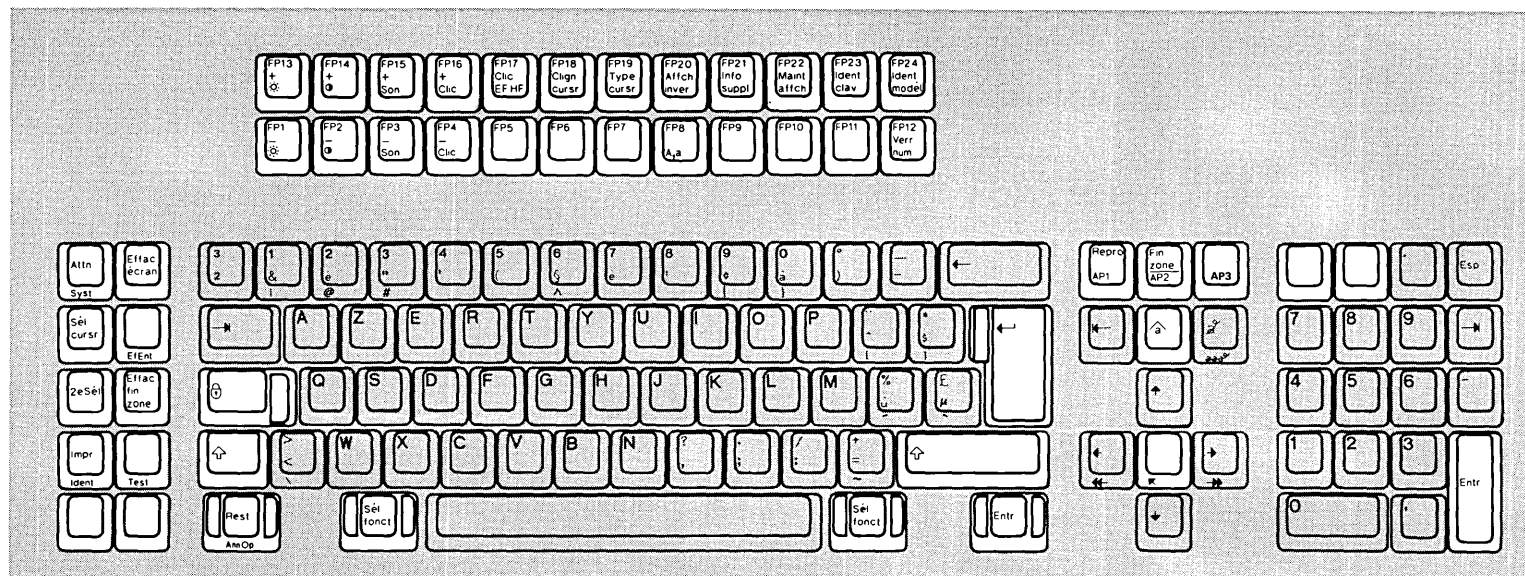
Data Entry Keyboard

Figure 6-14 (Part 1 of 2). Japanese Katakana Keyboards for 3180 Display Station

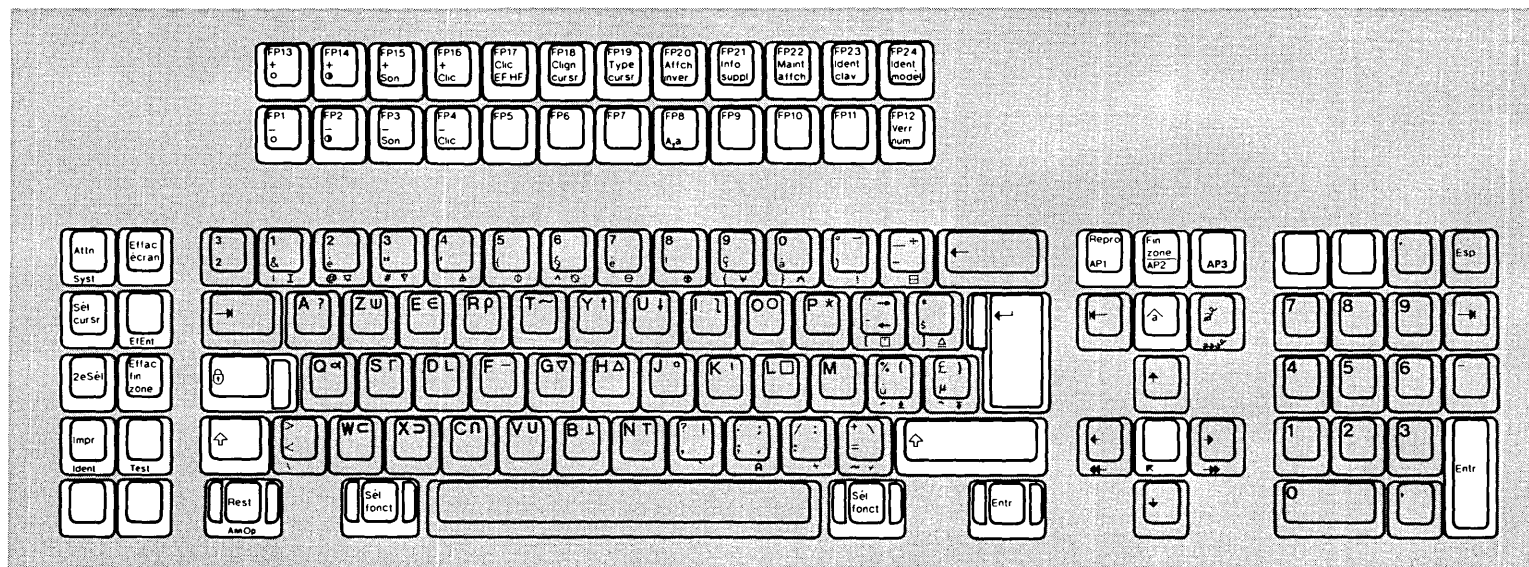


APL Keyboard

Figure 6-14 (Part 2 of 2). Japanese Katakana Keyboards for 3180 Display Station

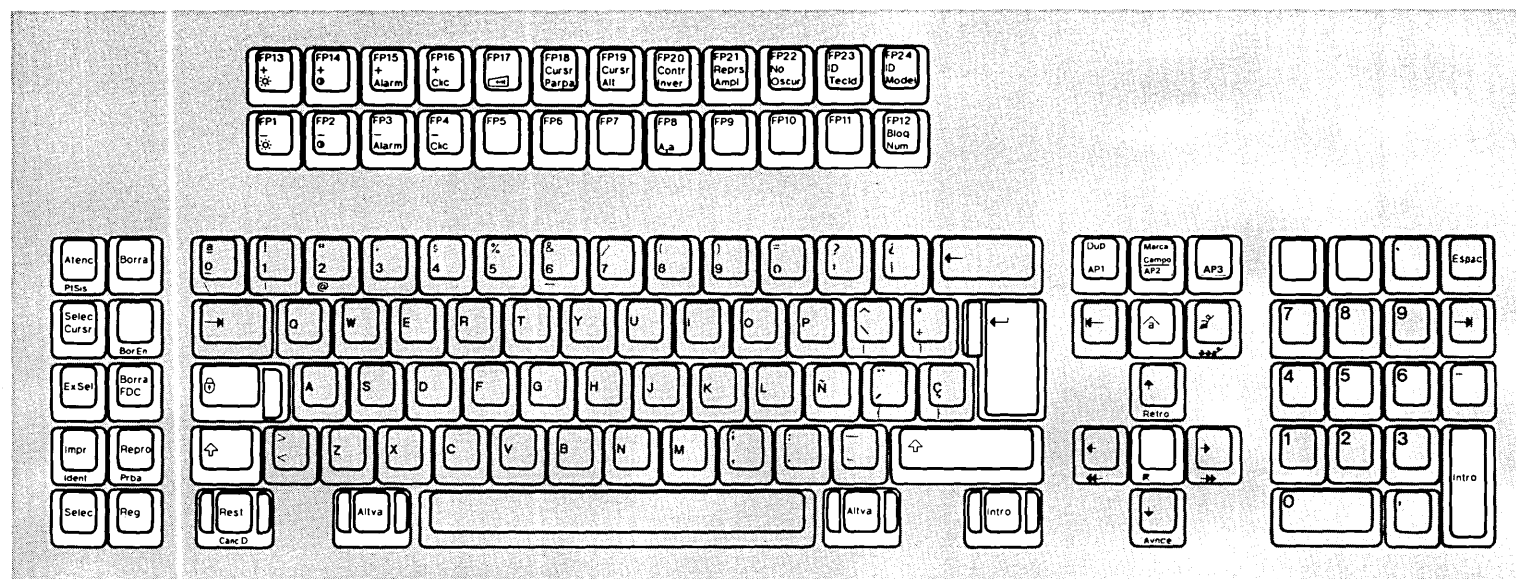


Typewriter Keyboard





APL Keyboard

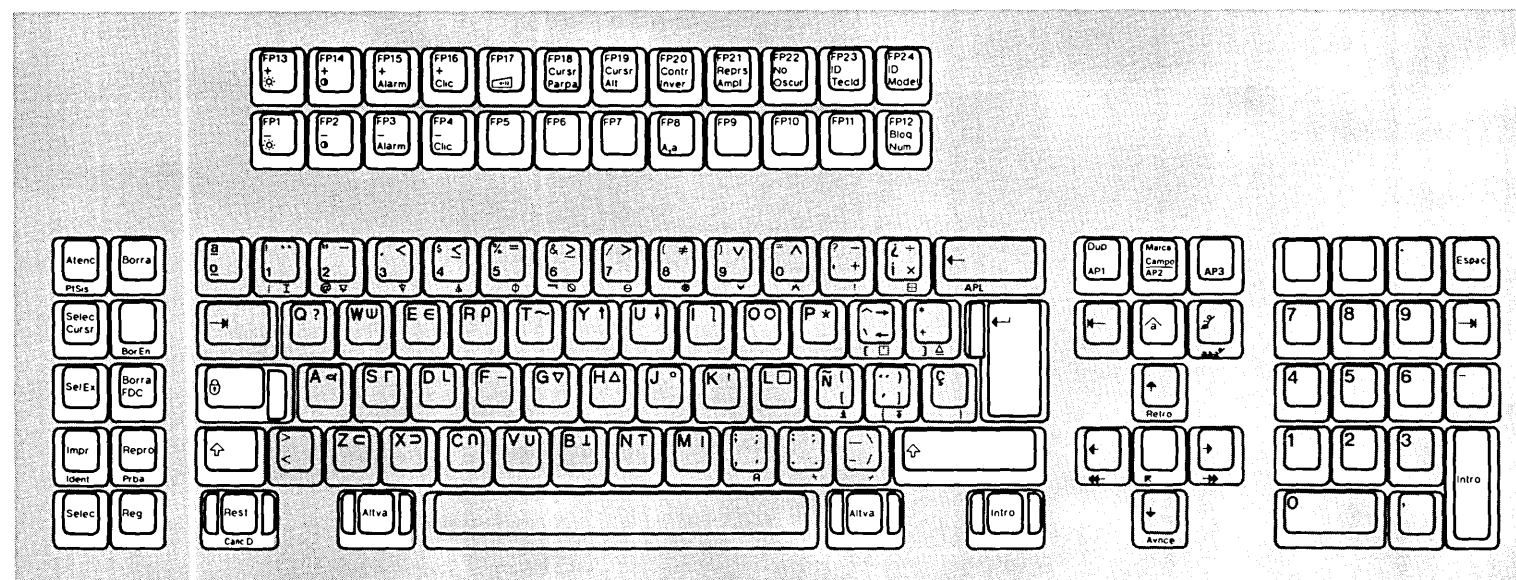
Figure 6-15. New Belgian Keyboards for 3180 Display Station (Not Supported by 3274 and 3276)





LEGEND:

-  Typematic Keys
-  Nontypematic Keys

Typewriter Keyboard

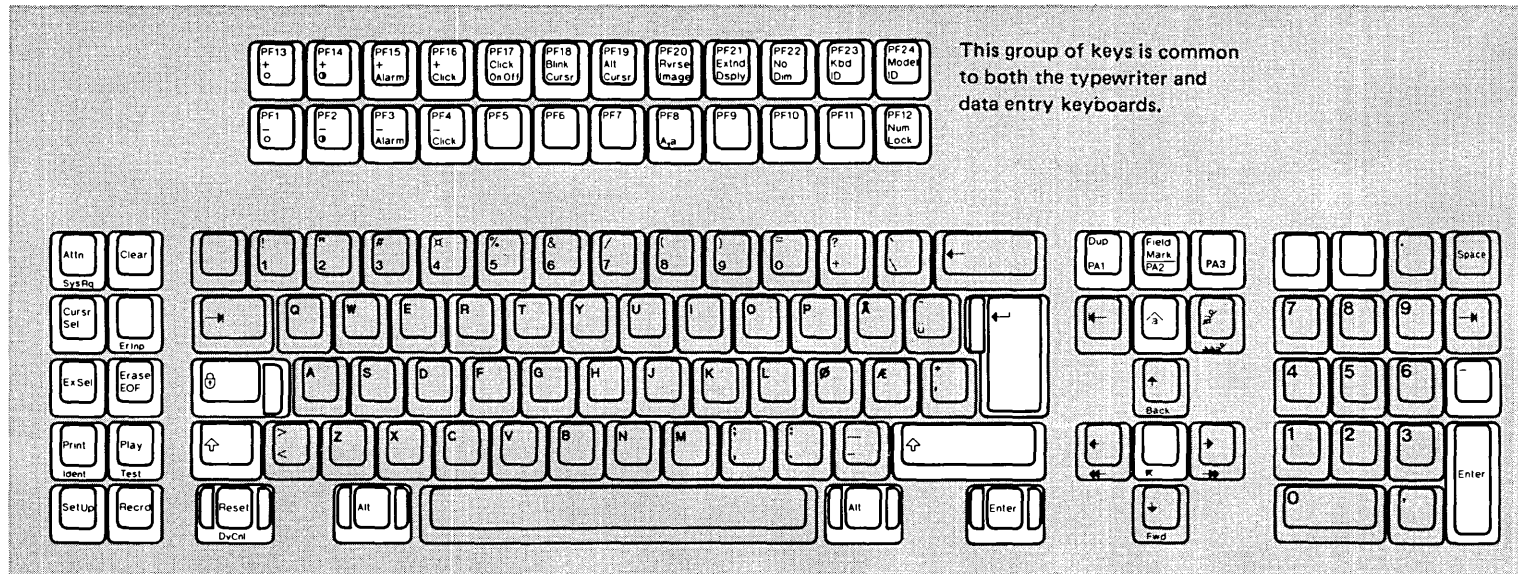


LEGEND:

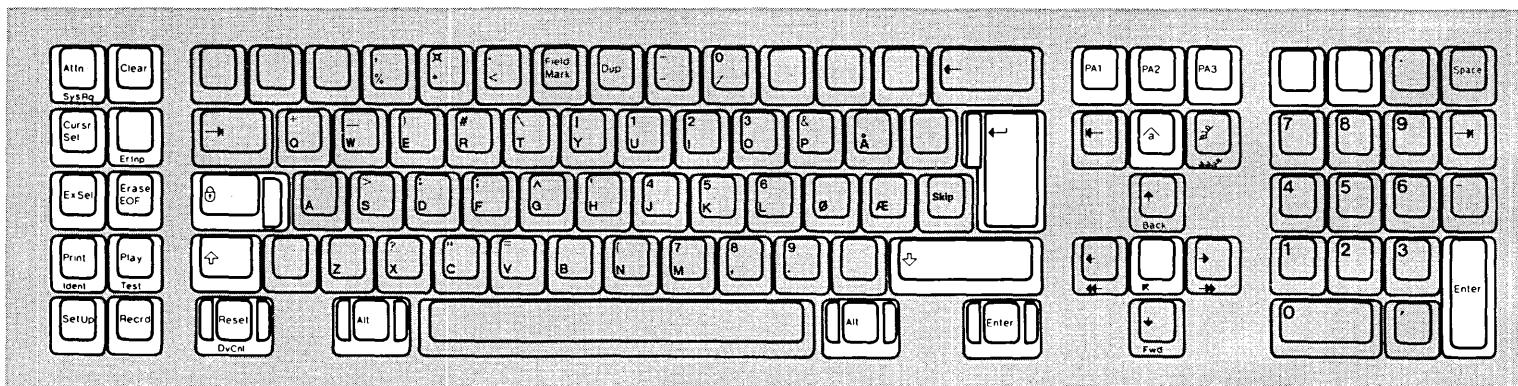
-  Typematic Keys
-  Nontypematic Keys

APL Keyboard

Figure 6-16. New Spanish Keyboards for 3180 Display Station

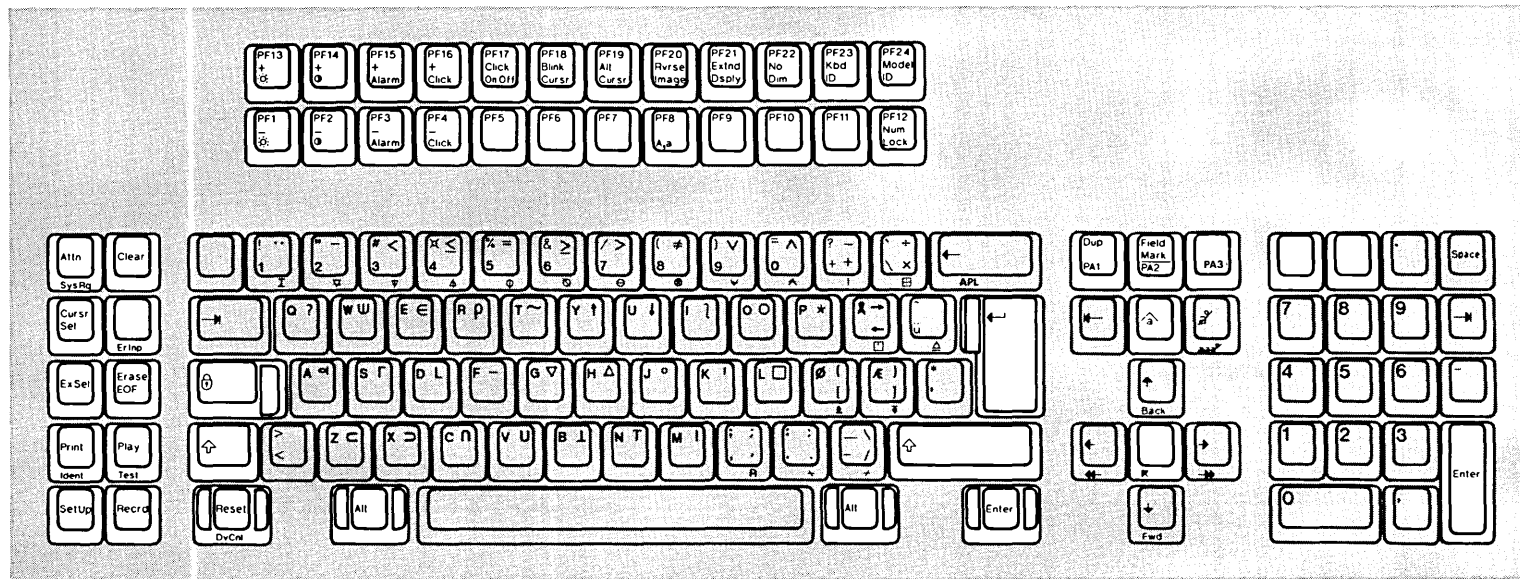


Typewriter Keyboard





Data Entry Keyboard

Figure 6-17 (Part 1 of 2). Norwegian Keyboards for 3180 Display Station

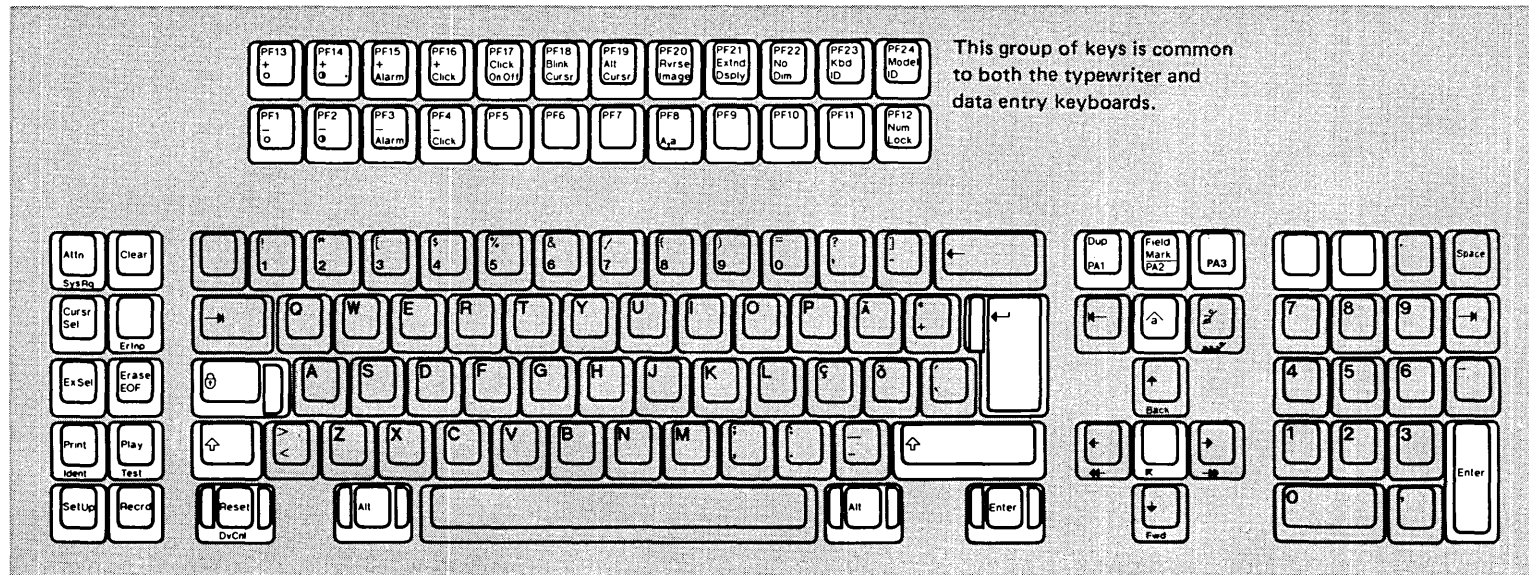


LEGEND:

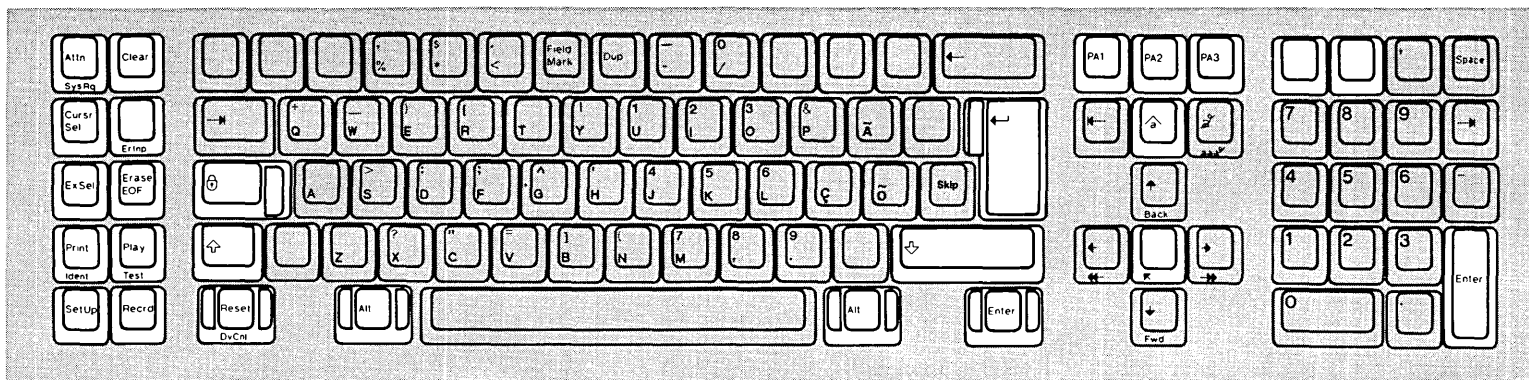
-  Typematic Keys
-  Nontypematic Keys

APL Keyboard

Figure 6-17 (Part 2 of 2). Norwegian Keyboards for 3180 Display Station

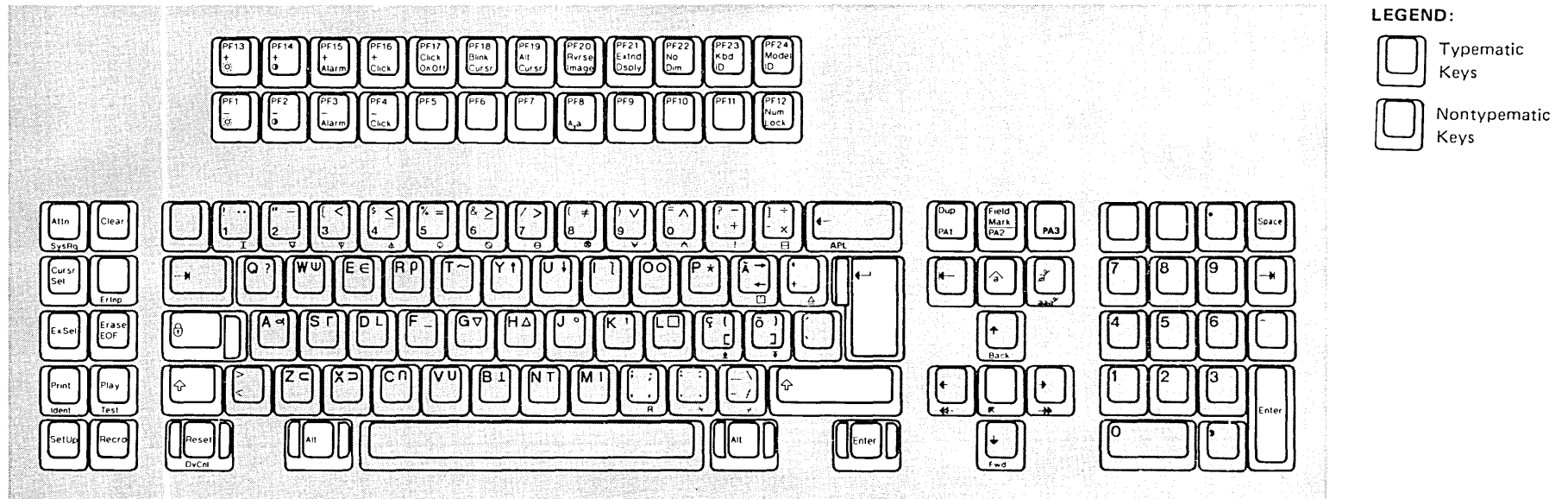


Typewriter Keyboard



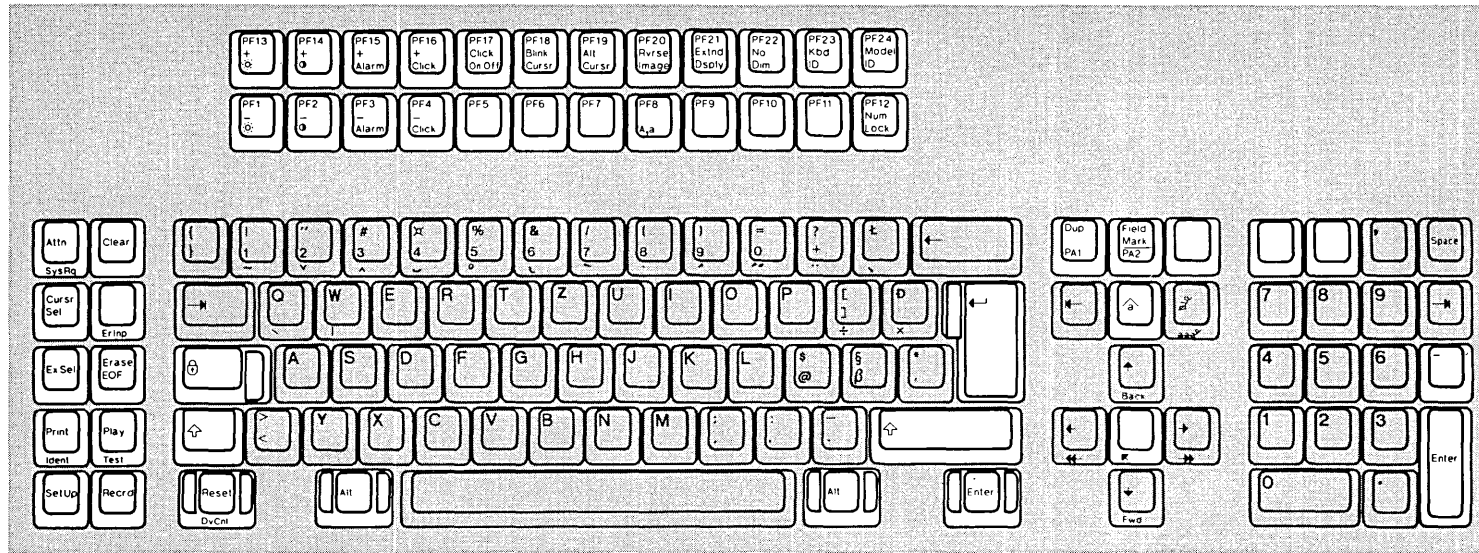
Data Entry Keyboard

Figure 6-18 (Part 1 of 2). Portuguese Keyboards for 3180 Display Station



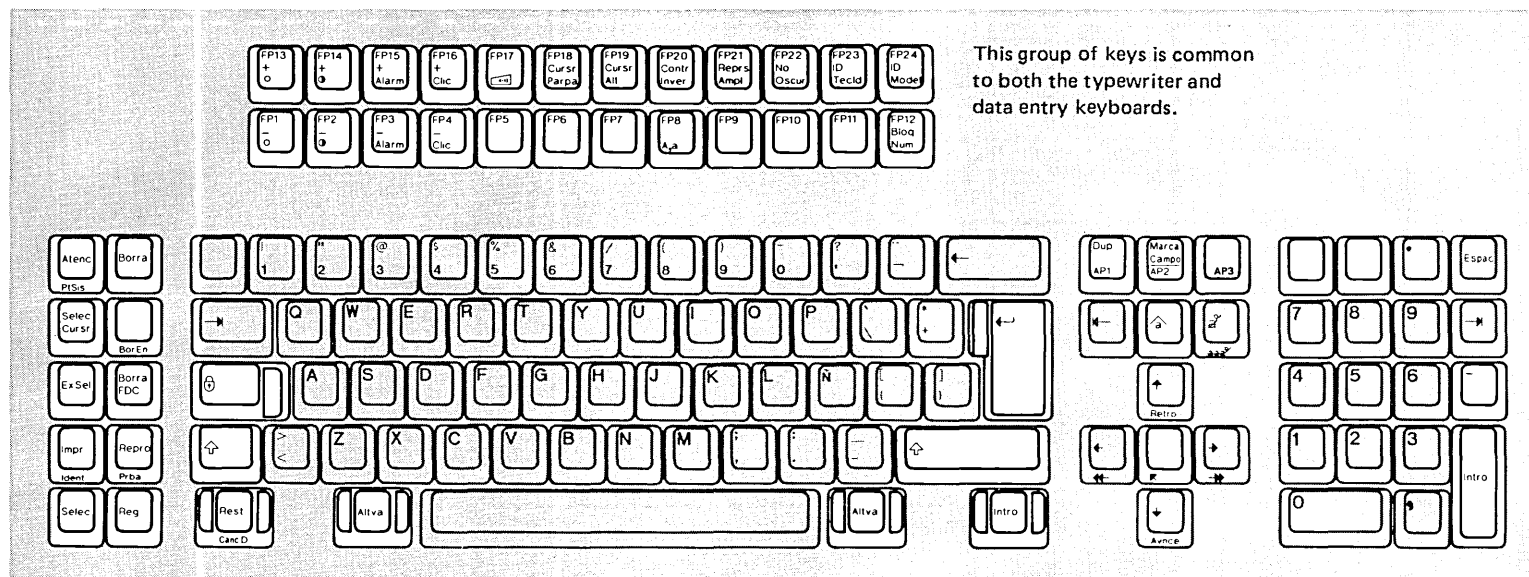
APL Keyboard

Figure 6-18 (Part 2 of 2). Portuguese Keyboards for 3180 Display Station

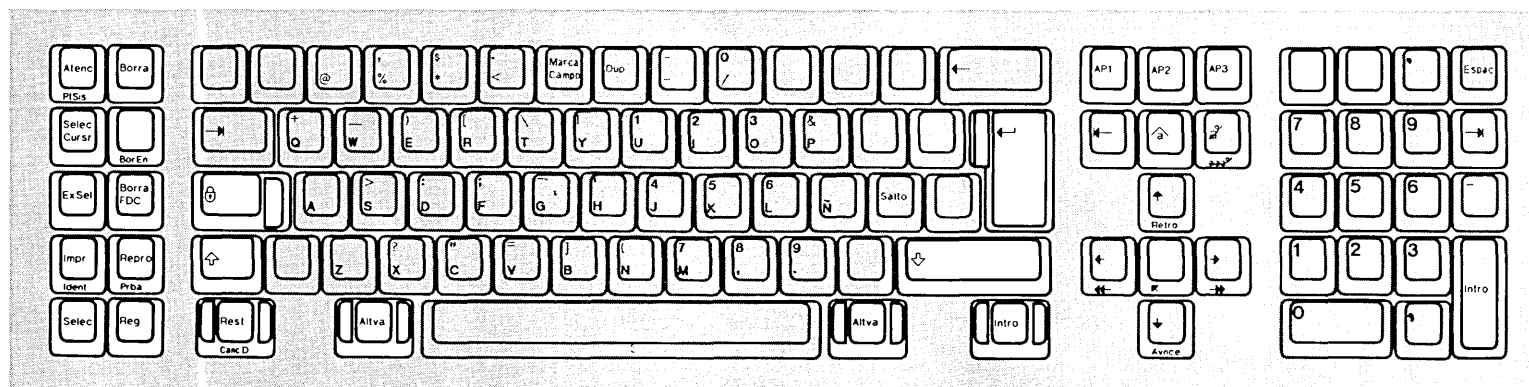


Typewriter Keyboard

Figure 6-18.1. ROECE Latin Keyboard for 3180 Display Station (Not Supported by 3274 and 3276)



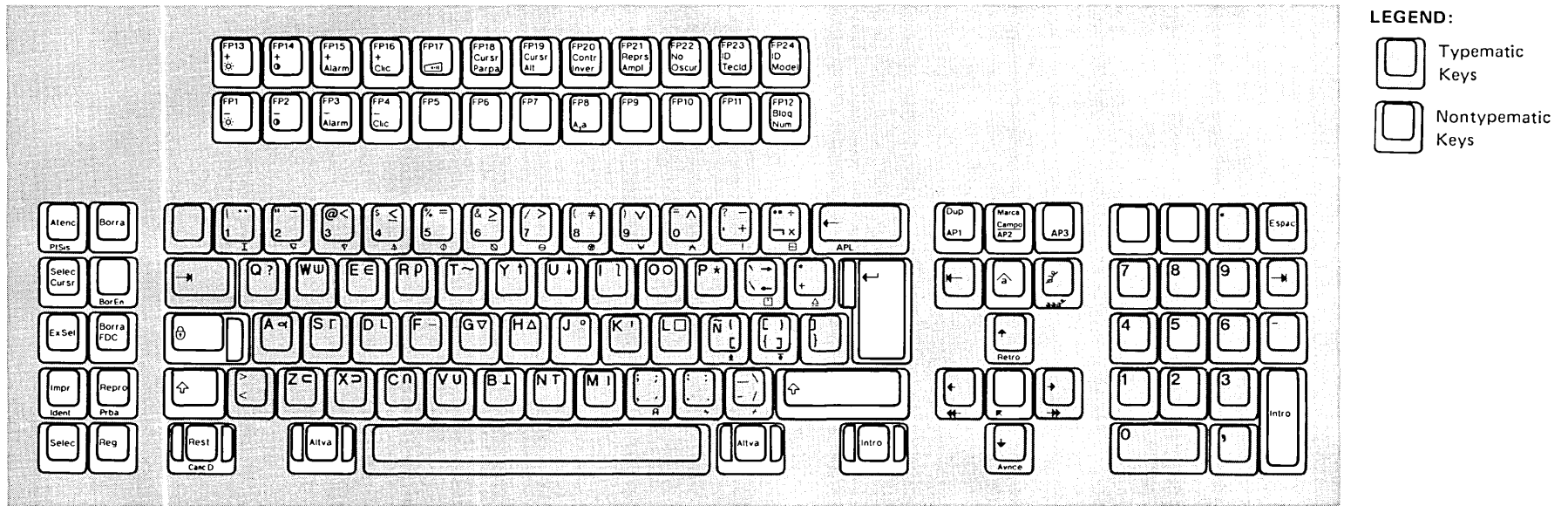
Typewriter Keyboard



Data Entry Keyboard

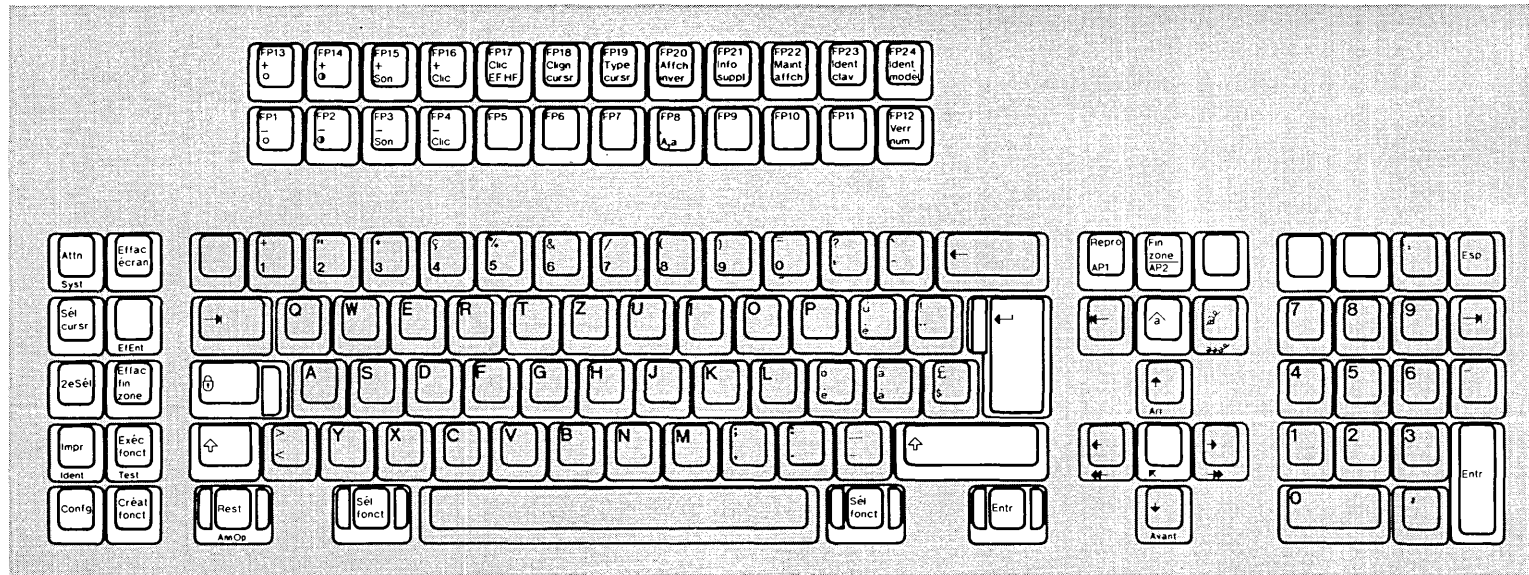
Figure 6-19 (Part 1 of 2). Spanish-Speaking Keyboards for 3180 Display Station



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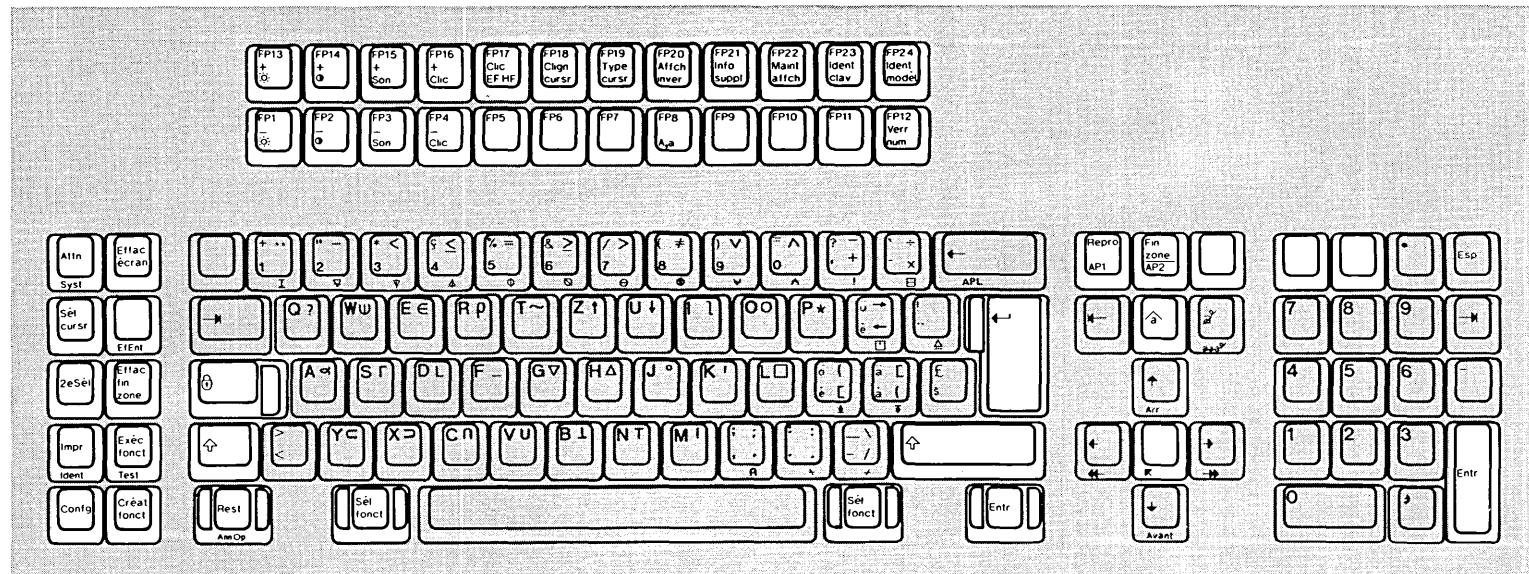




APL Keyboard

Figure 6-19 (Part 2 of 2). Spanish-Speaking Keyboards for 3180 Display Station

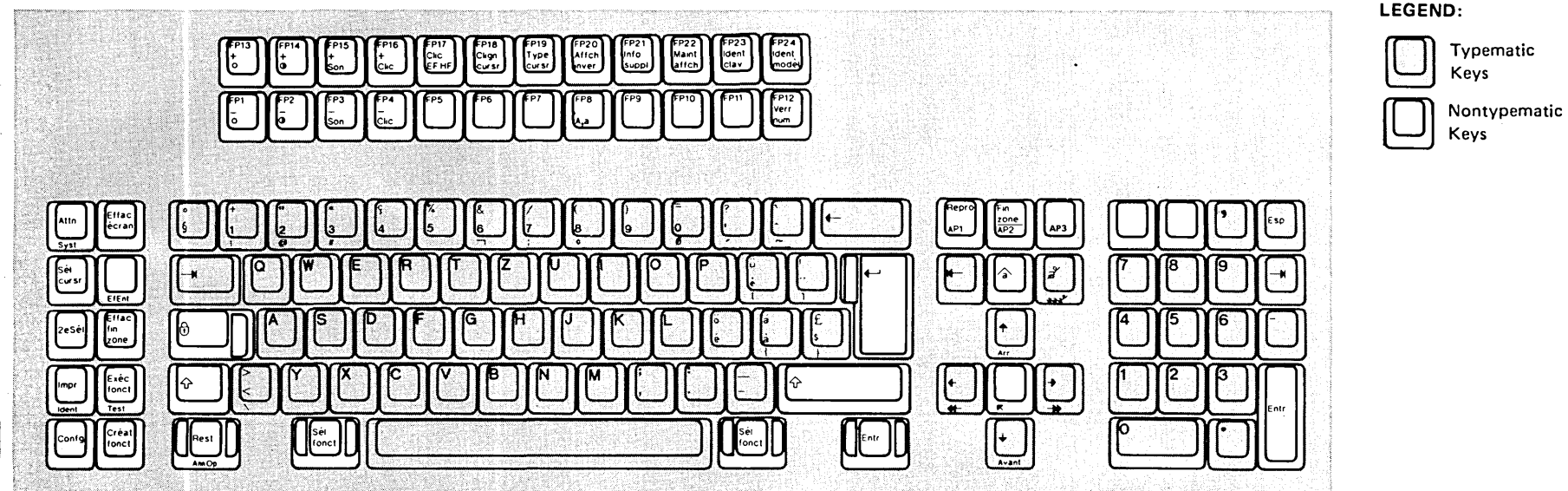
**LEGEND:**

-  Typematic Keys
-  Nontypematic Keys

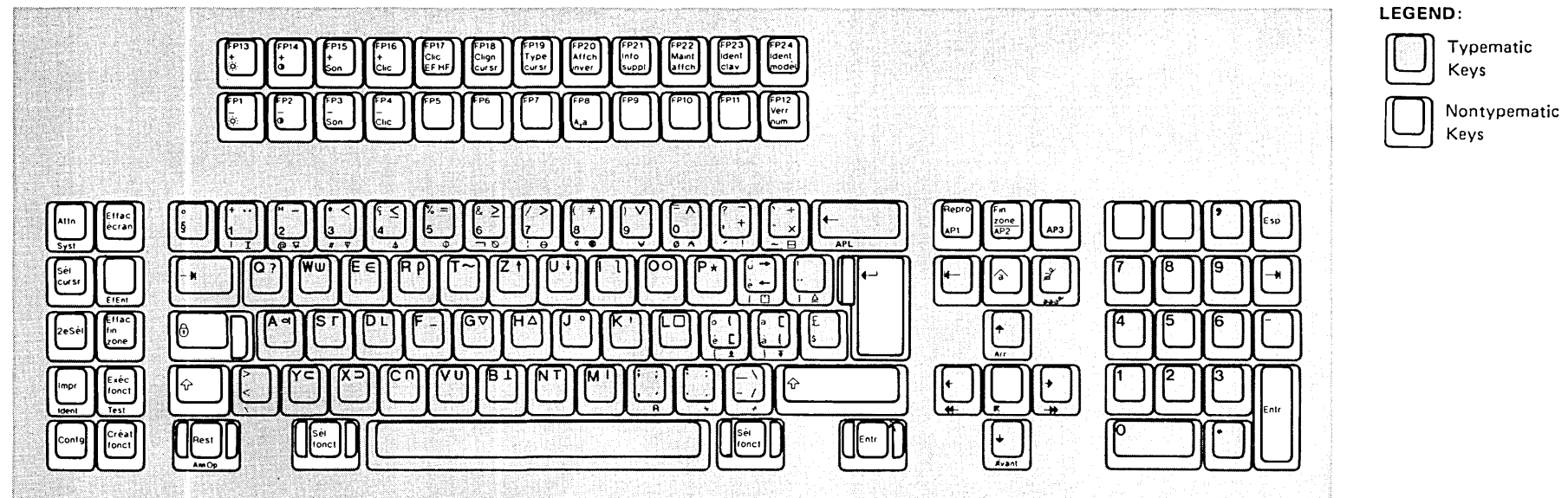
Typewriter Keyboard**LEGEND:**

-  Typematic Keys
-  Nontypematic Keys

APL Keyboard**Figure 6-20. Swiss-French Keyboards for 3180 Display Station (Not Supported by 3174)**

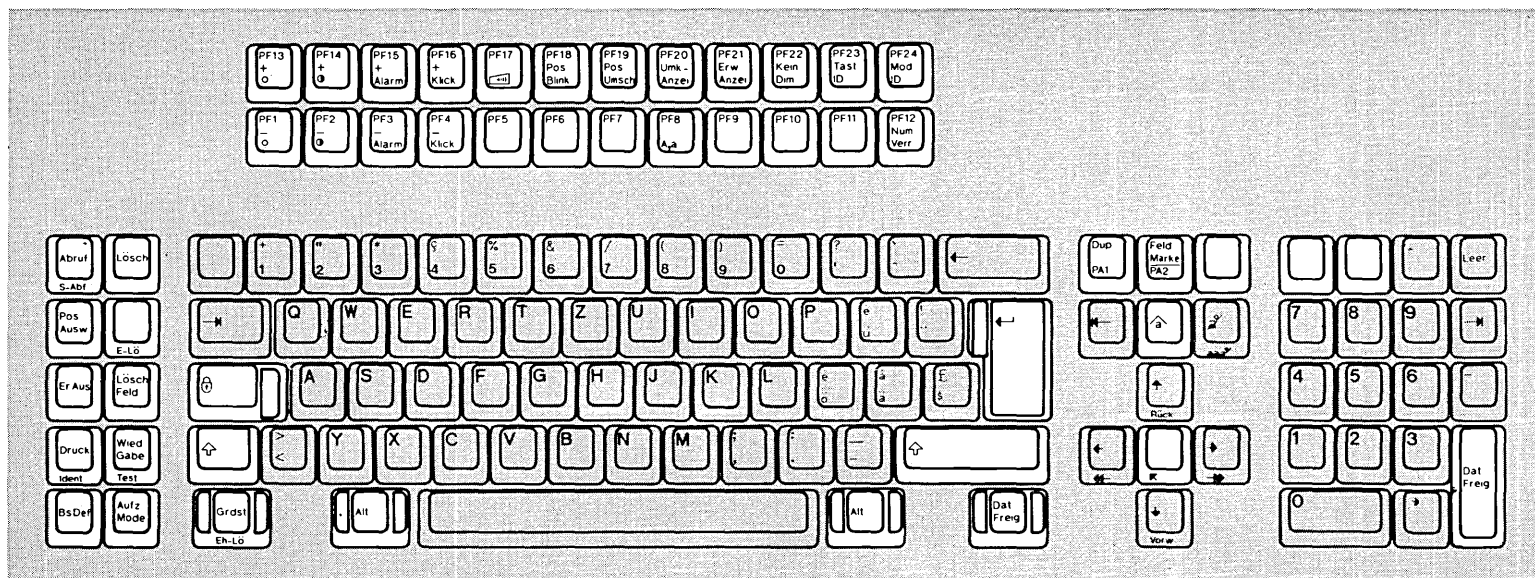


Typewriter Keyboard

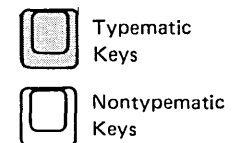


APL Keyboard

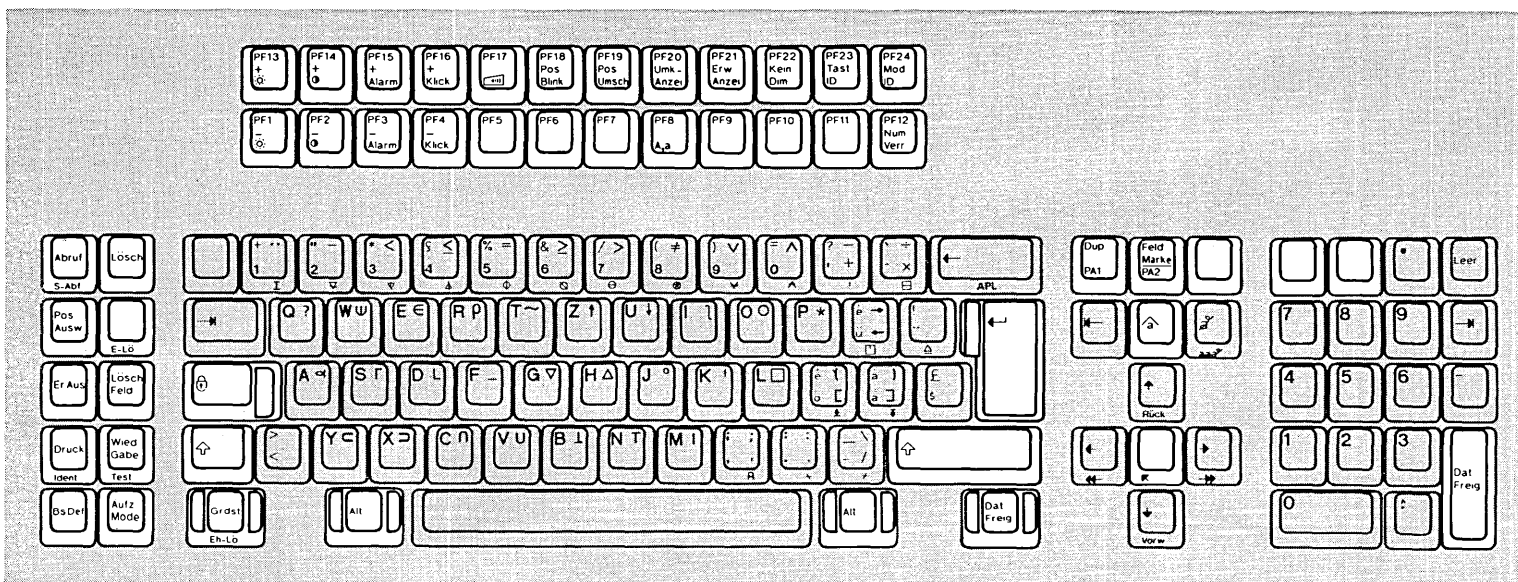
Figure 6-21. Swiss-French Extended Keyboards for 3180 Display Station (Not Supported by 3274 and 3276)



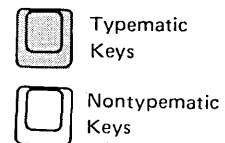
LEGEND:



Typewriter Keyboard

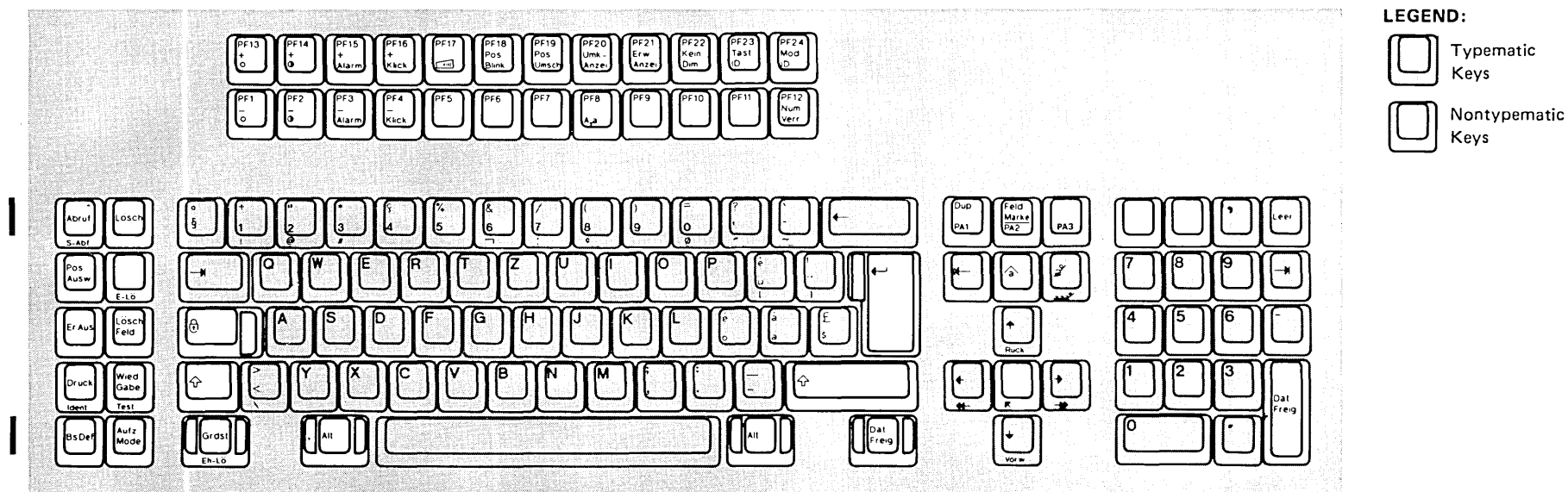


LEGEND:

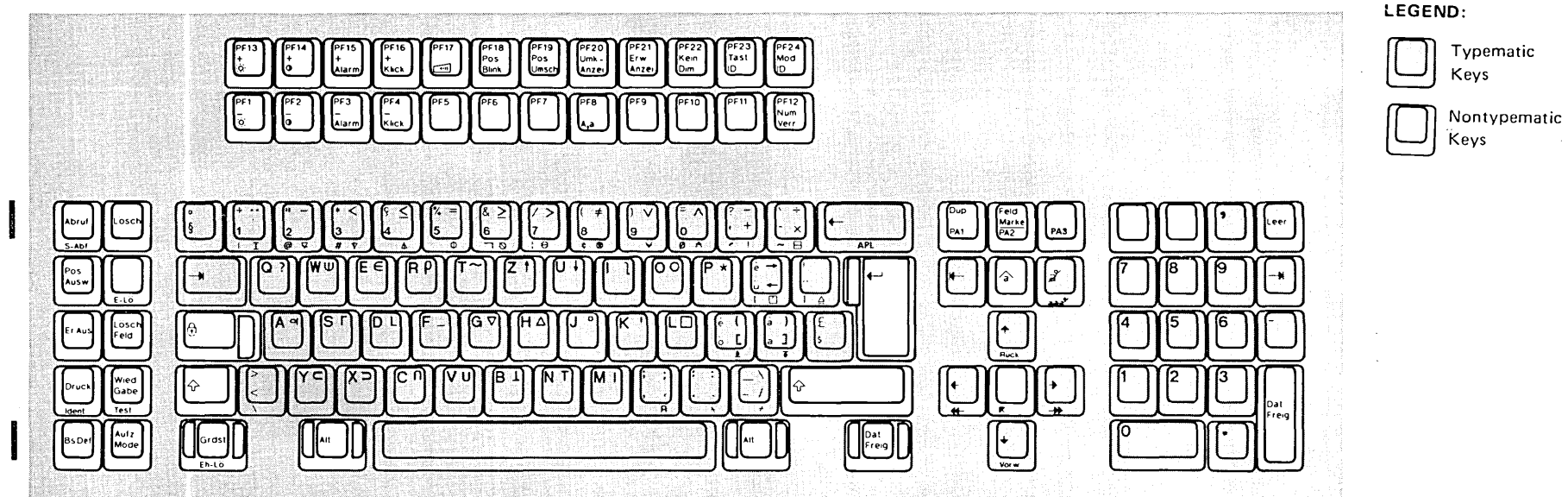


APL Keyboard

Figure 6-22. Swiss-German Keyboards for 3180 Display Station (Not Supported by 3174)

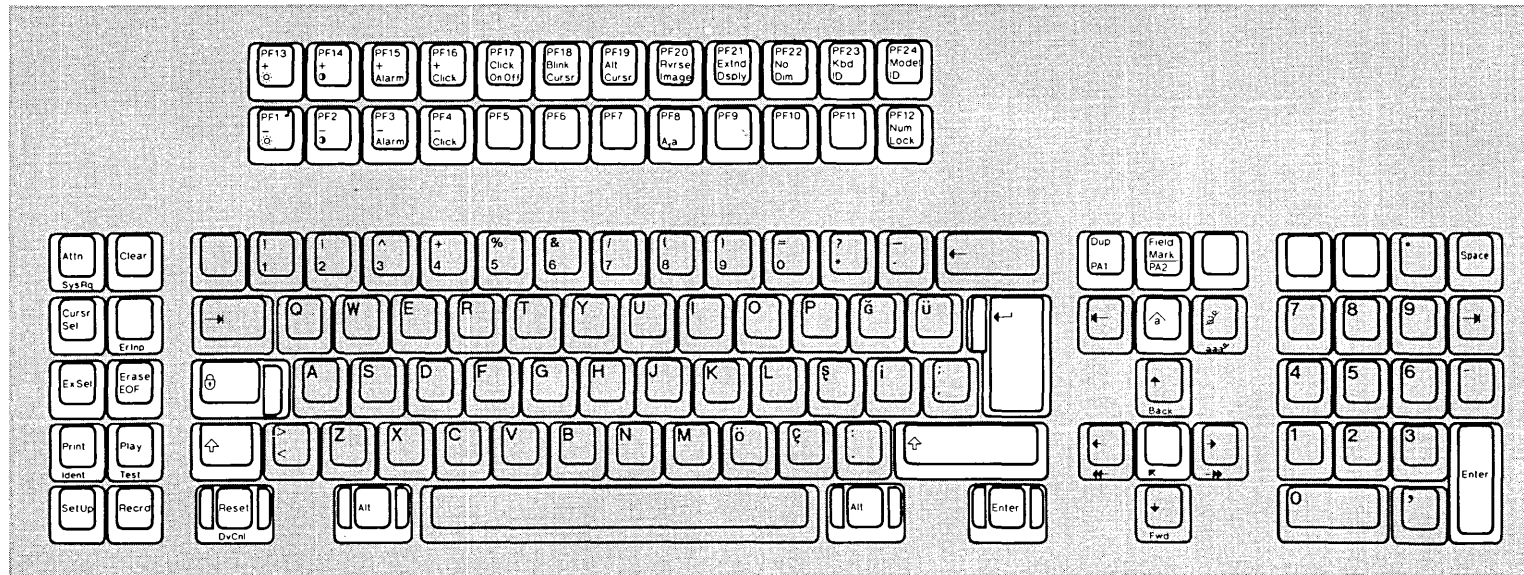




Typewriter Keyboard



APL Keyboard

Figure 6-23. Swiss-German Extended Keyboards for 3180 Display Station (Not Supported by 3274 and 3276)

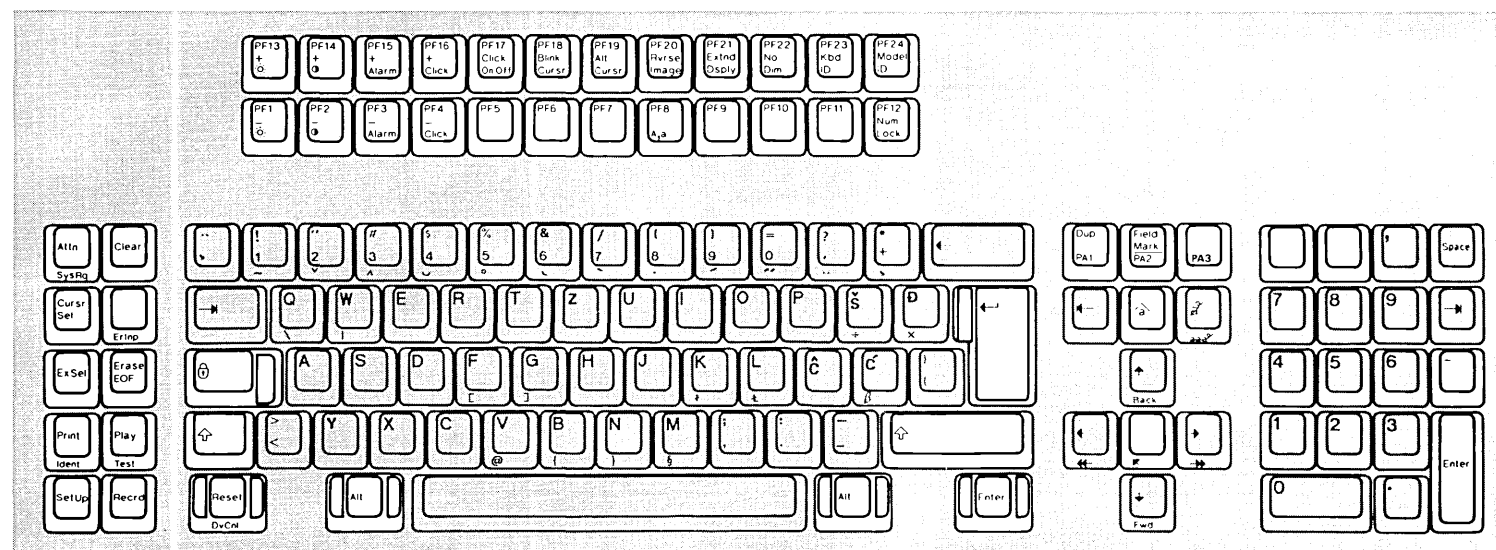
**LEGEND:**

-  Typematic Keys
-  Nontypematic Keys

Typewriter Keyboard

Note: The Turkish keyboard is a 3180 Display Station RPQ item.

Figure 6-24. Turkish Keyboard for 3180 Display Station (Not Supported by 3274 and 3276)



LEGEND:

Typematic
Keys

Nontypematic
Keys

Typewriter Keyboard

Figure 6-25. Yugoslav Keyboard for 3180 Display Station (Not Supported by 3274 and 3276)

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Chapter 7. 3270 Personal Computer Keyboards

This chapter provides definitions and layouts for the 3270 Personal Computer keyboards.

Keyboard Definitions

The 3270 Personal Computer keyboard is available in a typewriter layout in six languages. This keyboard and an APL keyboard, in U.S. English only, are available for the 3270 Personal Computer/G and /GX graphics work stations.

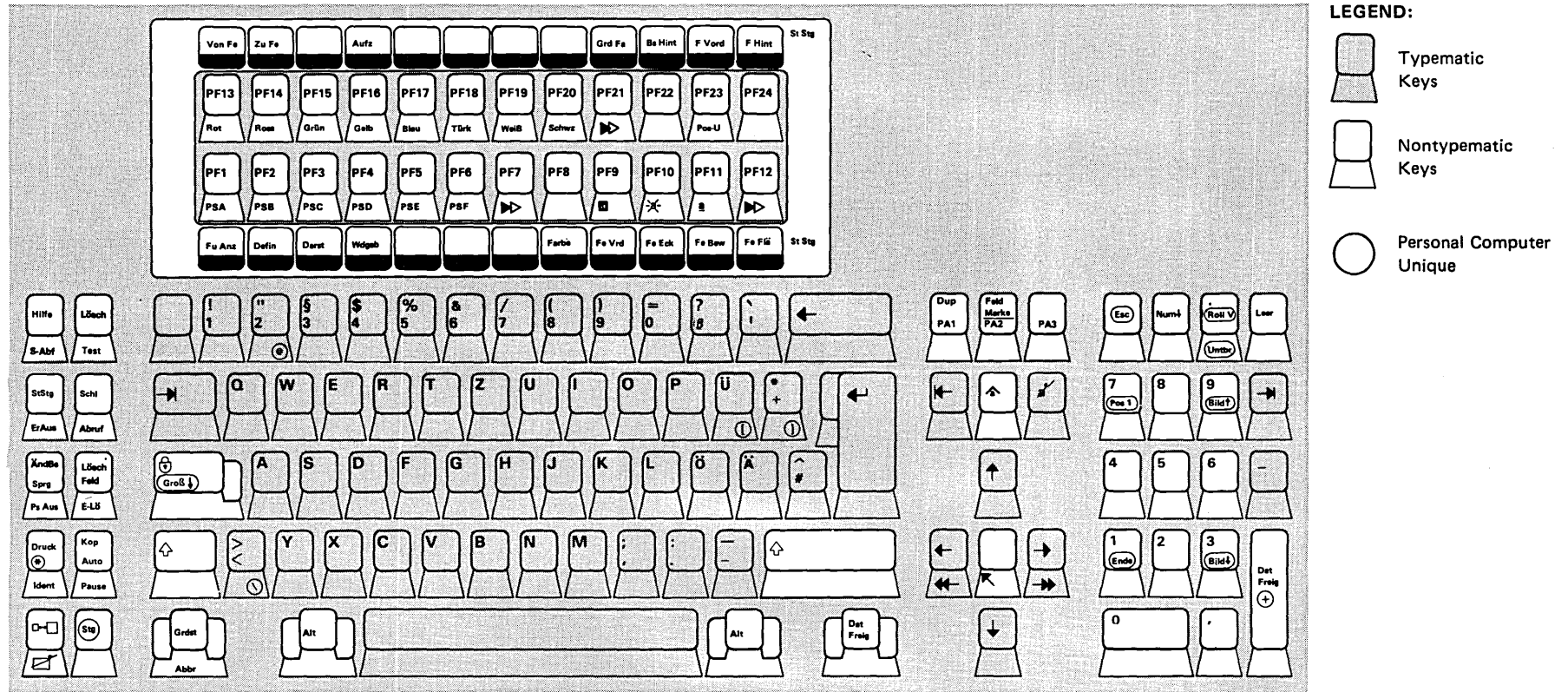
The keyboards have 122 keys. Twenty-four program function keys are located in two rows across the top of the keyboard. An 18-key numeric keypad is located on the right side of the keyboard. An overlay for the program function keys used to identify Work Station Control and Extended Select functions is included with the keyboard.

The keyboard layouts indicate the keys that are typematic for the power-on default configuration. The number and identity of typematic keys varies both when the keyboard is operating under control of the BASIC program and when the keyboard is operating under the 3270 Personal Computer Control Program and 3270 Personal Computer Graphics Control Program.

The circled keytop symbols on the keyboard layouts indicate that those functions are operational only during a personal computer session, not during a 3270 host session.

Keyboard Layouts

Figures 7-1 through 7-6 illustrate the 3270 Personal Computer keyboard layouts for the various national languages.

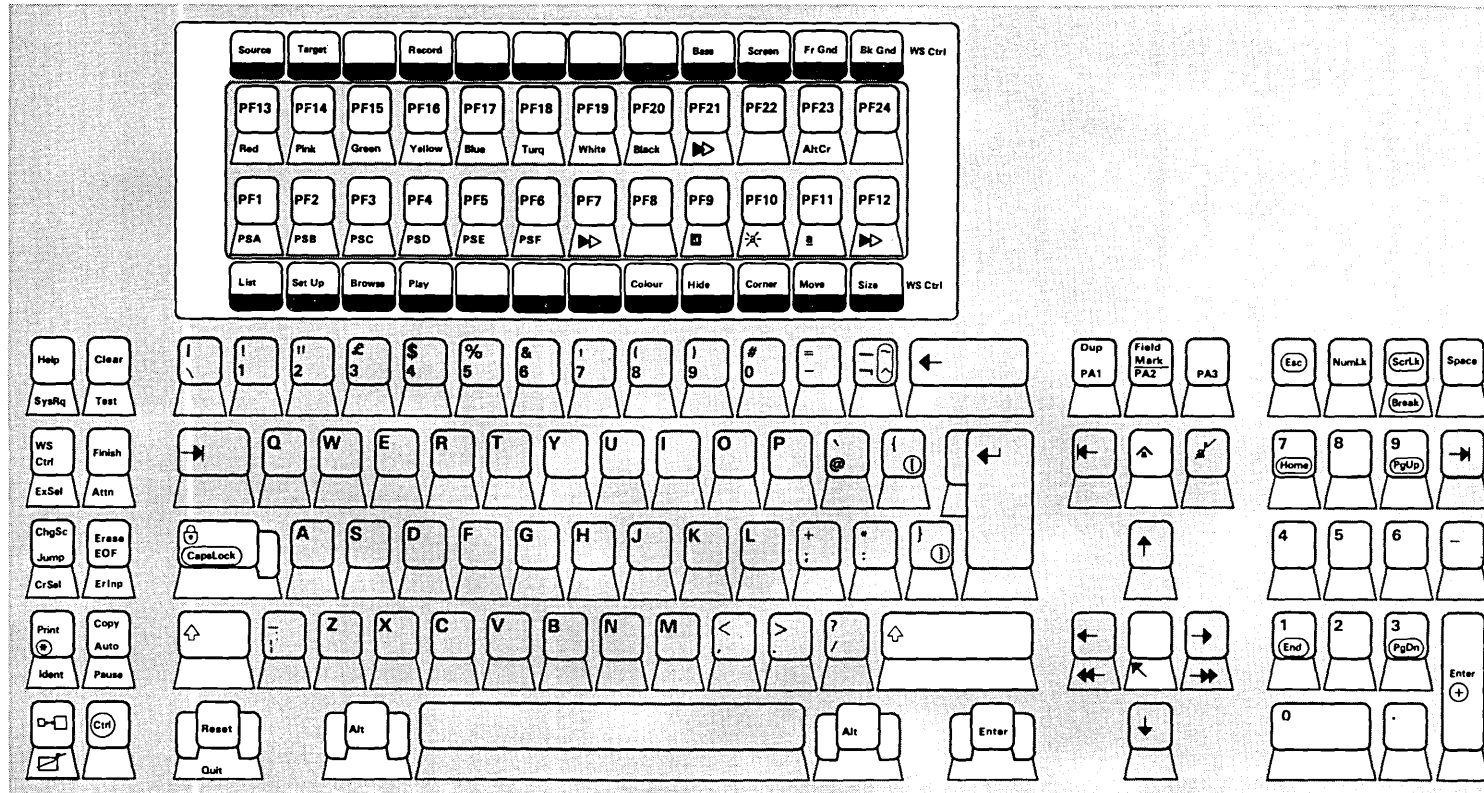


Typewriter Keyboard

Figure 7-1. Austrian/German Keyboard for 3270 Personal Computer

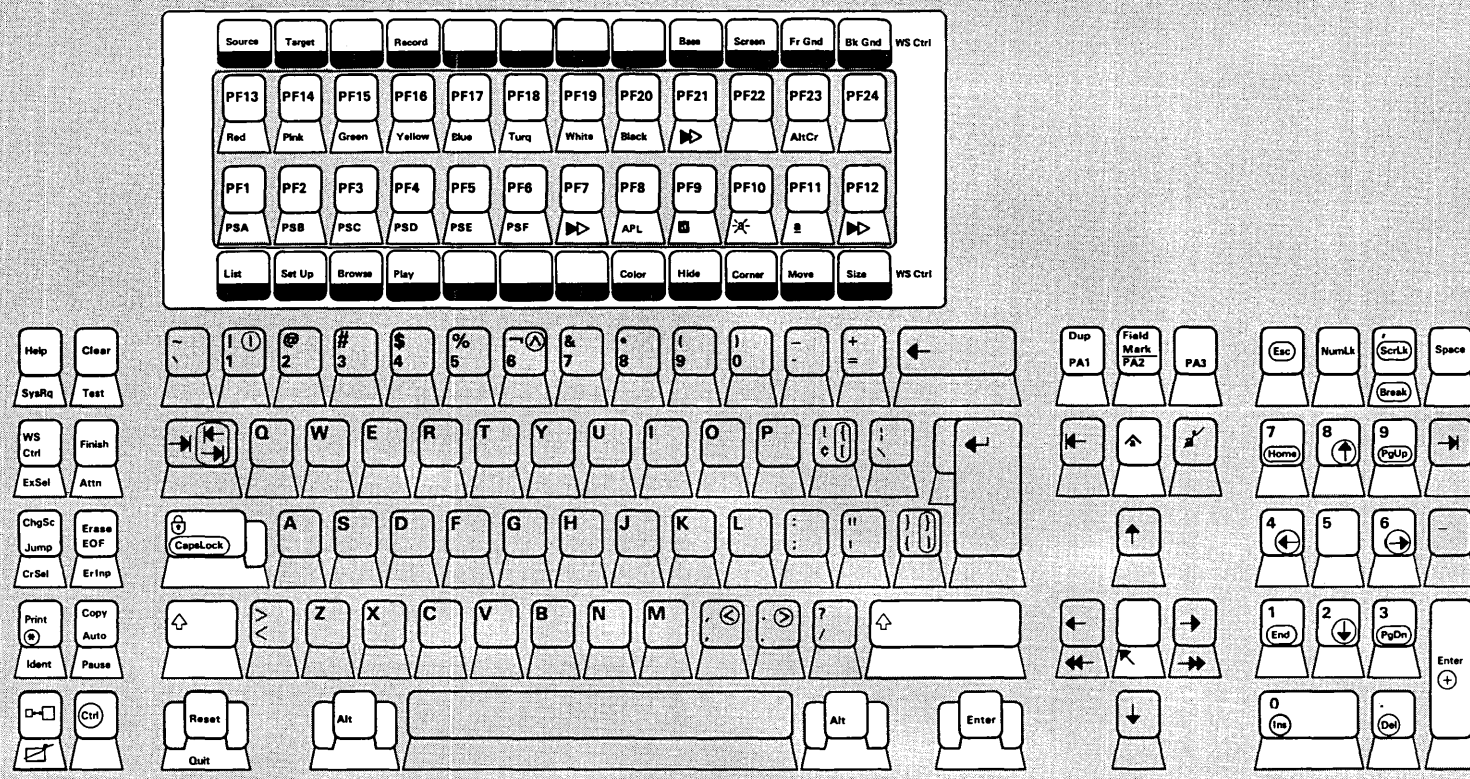
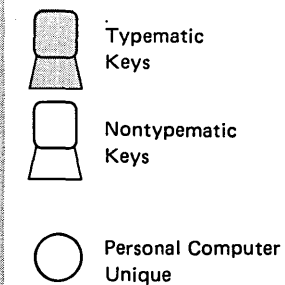
LEGEND:

- Typematic Keys
- Nontypematic Keys
- Personal Computer Unique

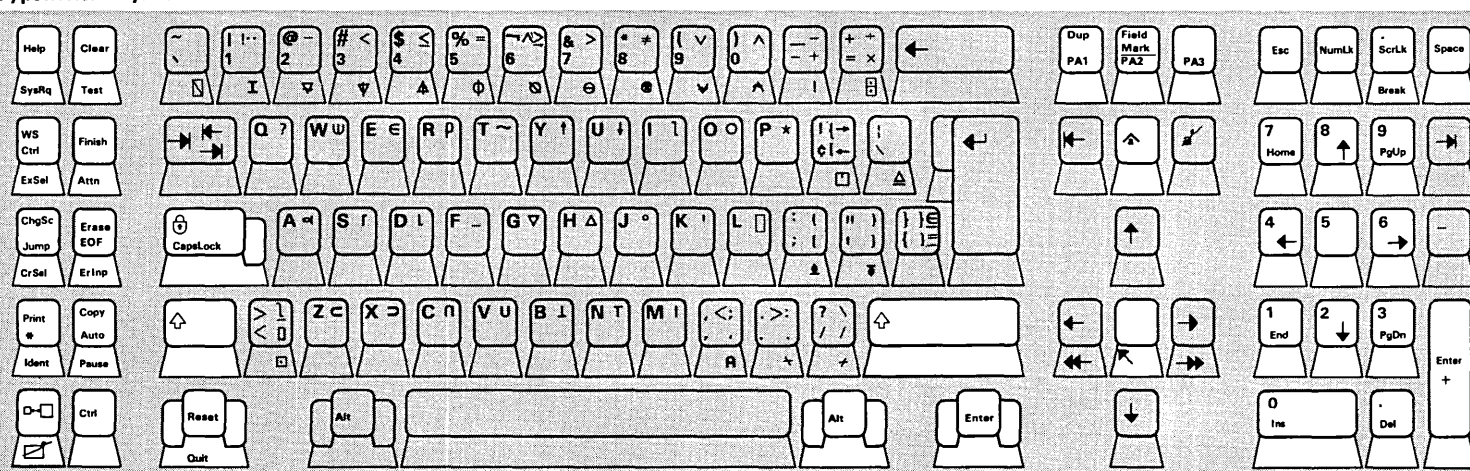


Typewriter Keyboard

Figure 7-2. English (U.K.) Keyboard for 3270 Personal Computer

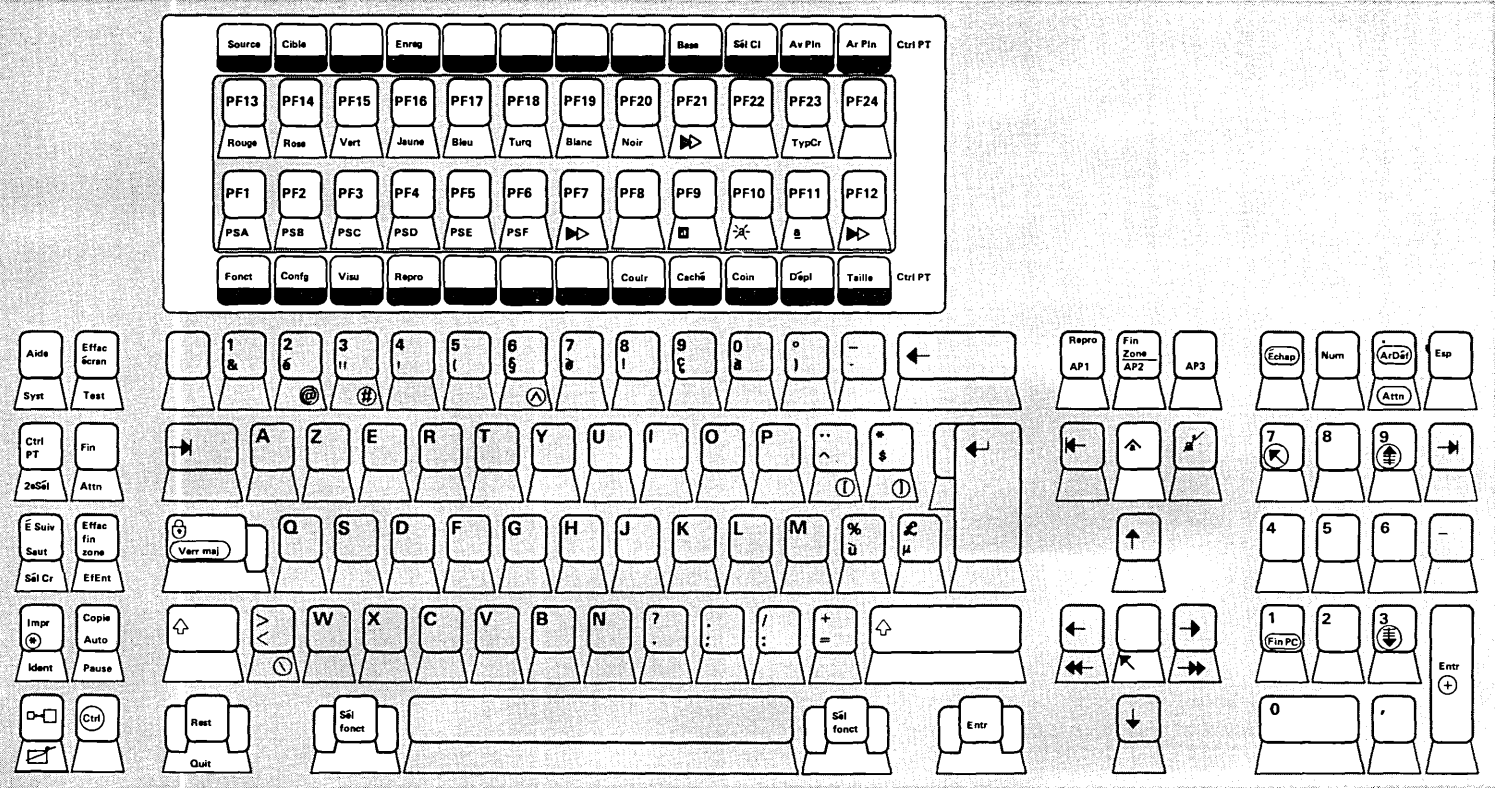


Typewriter Keyboard



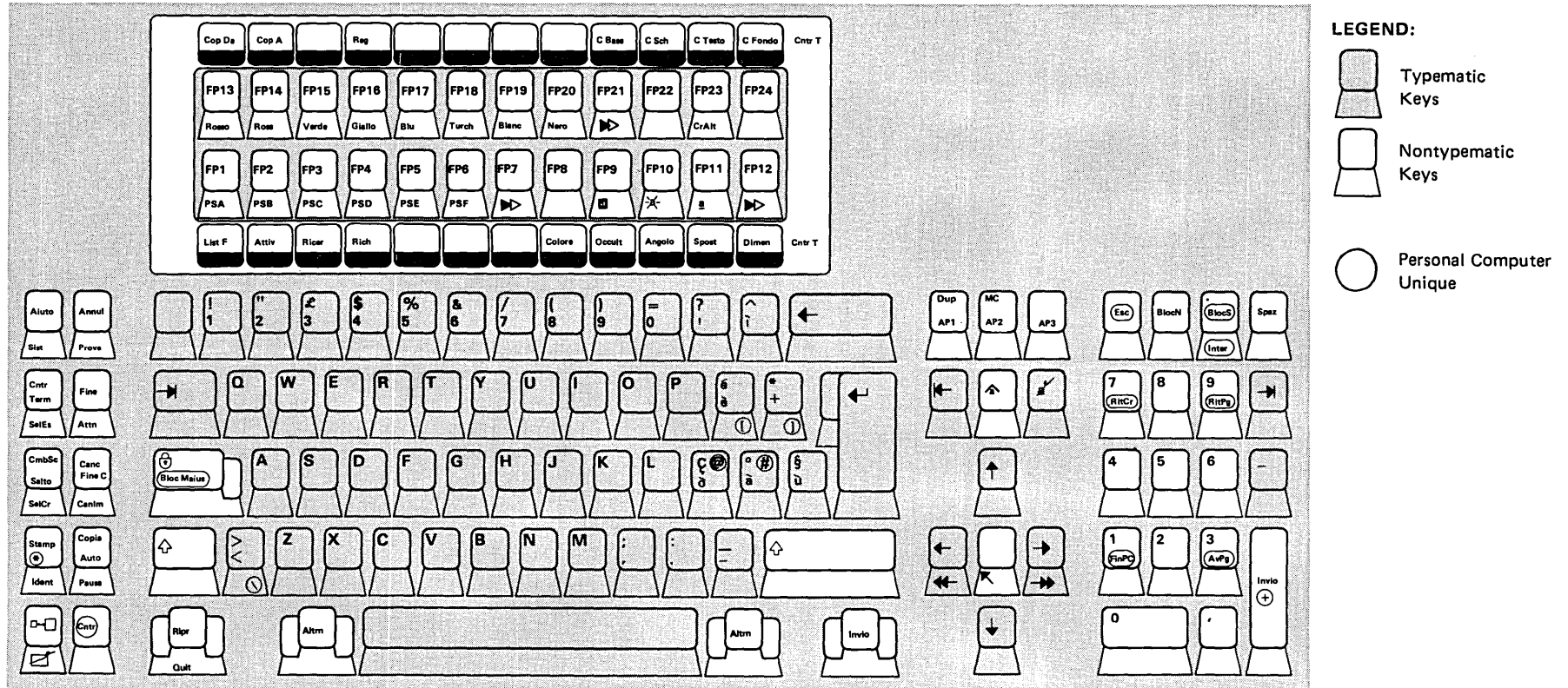
APL Keyboard

Figure 7-3. English (U.S.) Keyboards for 3270 Personal Computer



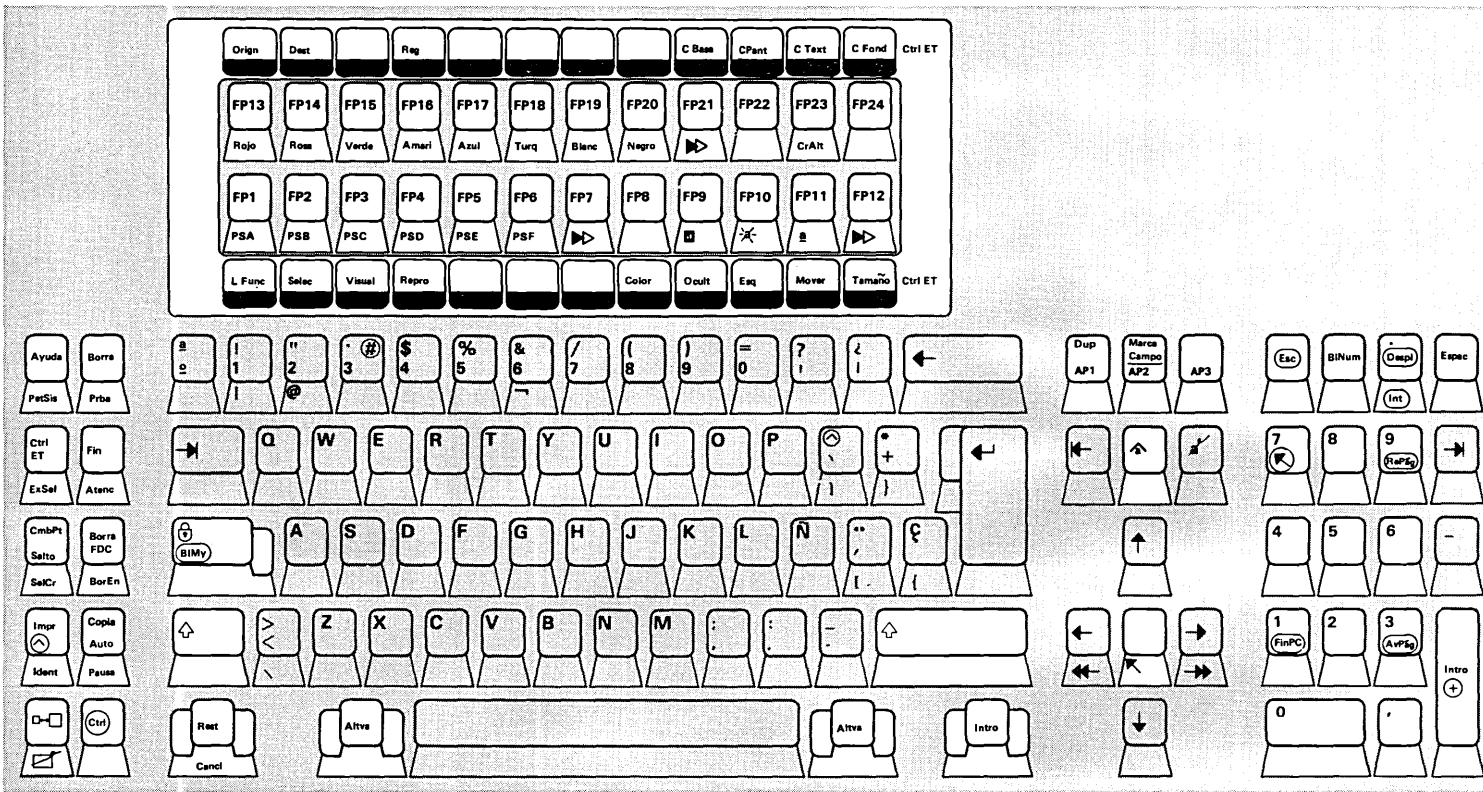
Typewriter Keyboard

Figure 7-4. French (AZERTY) Keyboard for 3270 Personal Computer



Typewriter Keyboard

Figure 7-5. Italian Keyboard for 3270 Personal Computer



LEGEND:

- Typematic Keys
- Nontypematic Keys
- Personal Computer Unique

Typewriter Keyboard

Figure 7-6. Spanish Keyboard for 3270 Personal Computer

Chapter 8. 3290 Information Panel Keyboards

This chapter provides definitions and layouts for the 3290 Information Panel keyboards.

Keyboard Definitions

The 3290 keyboard is available in either a Typewriter or APL layout. The keyboard has 104 keys in the versions for the United States and most World Trade countries, 105 keys in the Japanese English version, and 106 keys in the Japanese Katakana version. The 3290 Typewriter keyboard includes these function keys: Clear Partition, Jump Screen, Jump Partition, Modify, Zoom (Enlarge), Rule, Scroll Up, and Scroll Down. The 104-key, 105-key, and 106-key keyboards differ only in their data sections.

The keyboard definition function allows the user to change the layout of the 3290 keyboard. Using the Keyboard Definition Utility located on the 3290 Utility diskette, the user can define up to three different keyboard layouts, in addition to the basic keyboard. These layouts are stored in keyboard tables that are selected by keyboard ID switches on the bottom of the keyboard.

The keyboard definition function is supported in all 3290 keyboard languages except Hebrew and Katakana.

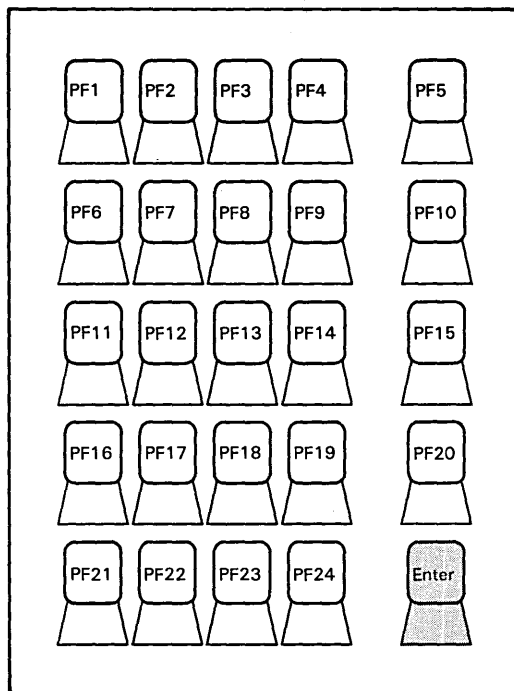
104-Key Typewriter/APL Keyboard: A typical 104-key Typewriter/APL keyboard consists of a data section with 49 keys and 10 control keys; a control-key section of 10 keys on the left side; a control-key section of 11 keys on the right side; and a program-function section with 24 keys.

3290 Keypad: There are four separately housed keypads, available as an optional feature, for program function and numeric data entry applications:

- A 25-key program function keypad
- Three numeric keypads, with slightly different layouts:
 - For the United States and Canada, a 24-key layout
 - For World Trade countries, a choice of two 25-key layouts. The two keypads differ in the location of the comma and of the decimal point.

Keyboard Layouts

Figures 8-1 through 8-25 illustrate the 3290 keyboard and keypad layouts for the various national languages.



Program Function Keypad

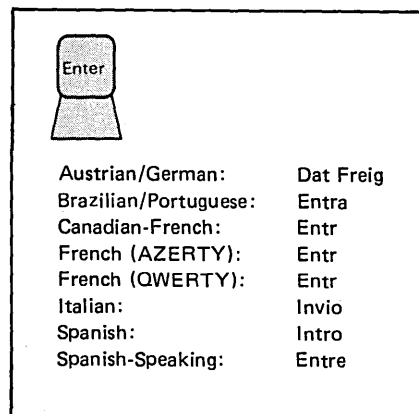
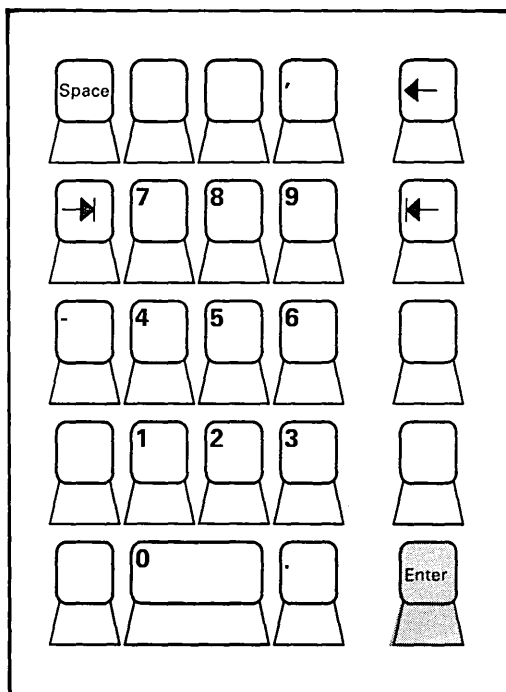
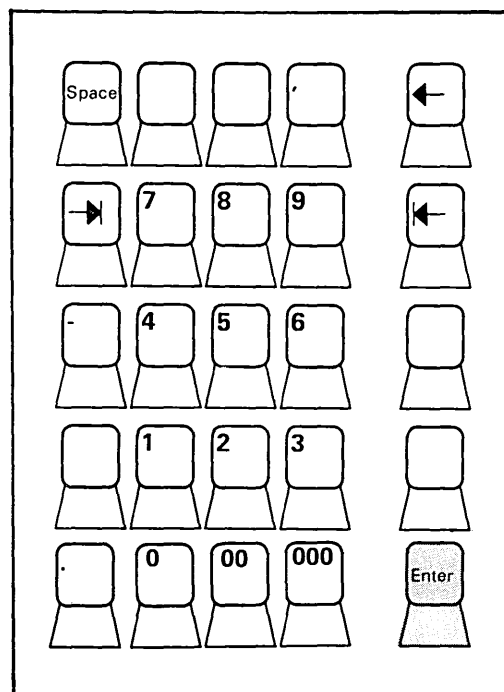


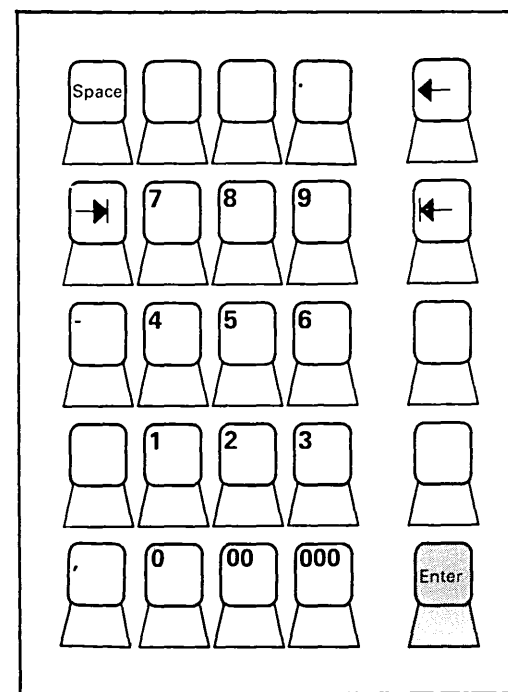
Figure 8-1 (Part 1 of 2). 3290 Information Panel Program Function and Numeric Keypads



Numeric Keypad: U. S. and Canada



Numeric Keypad: World Trade Countries



Numeric Keypad: World Trade Countries

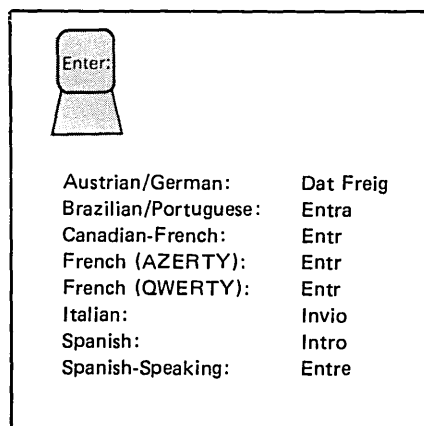
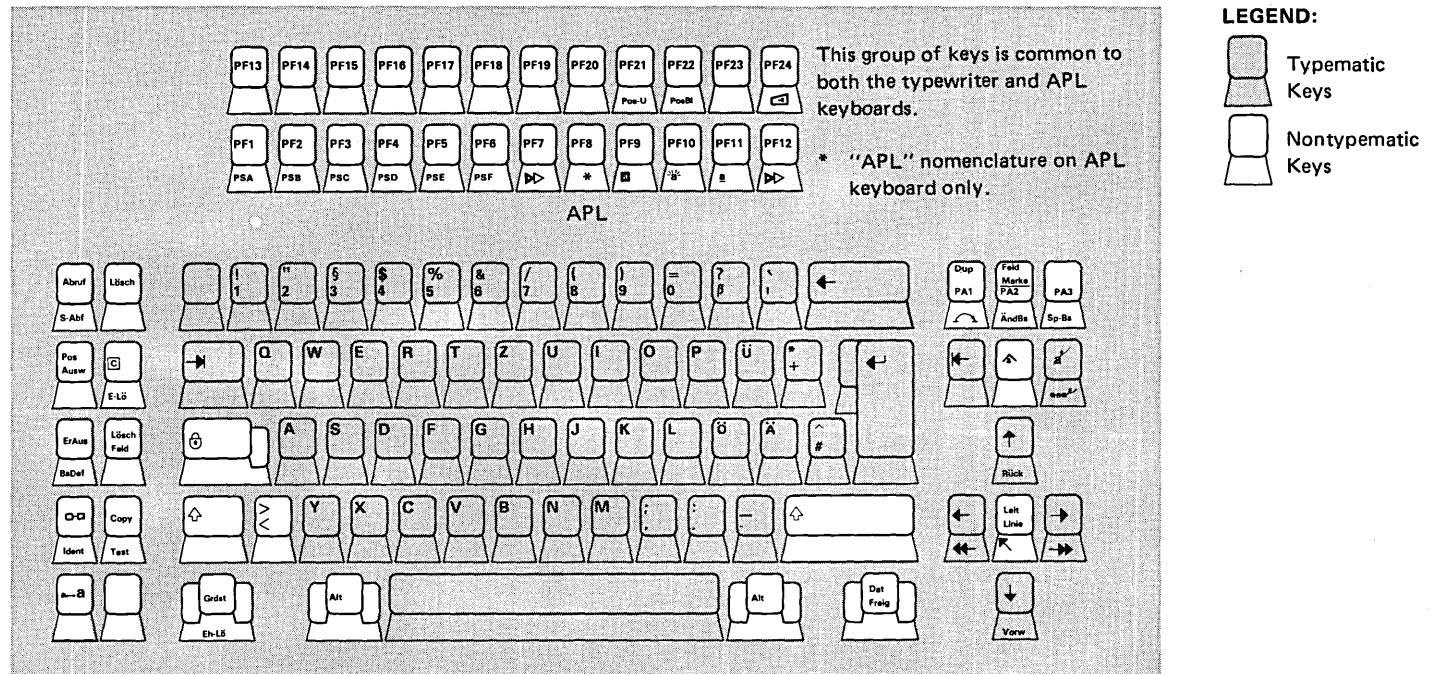
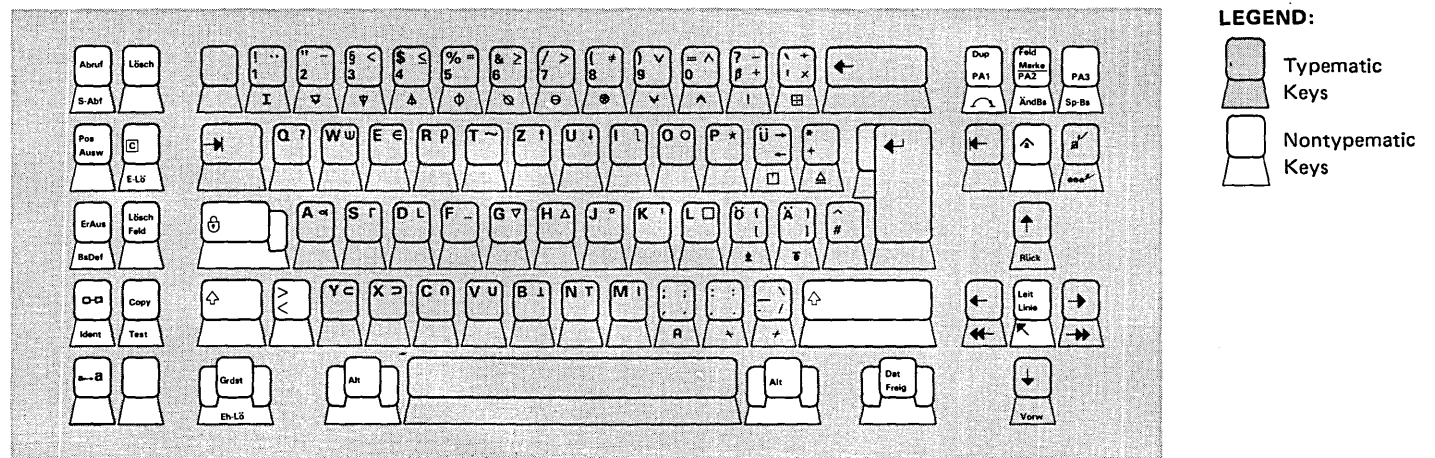


Figure 8-1 (Part 2 of 2). 3290 Information Panel Program Function and Numeric Key pads

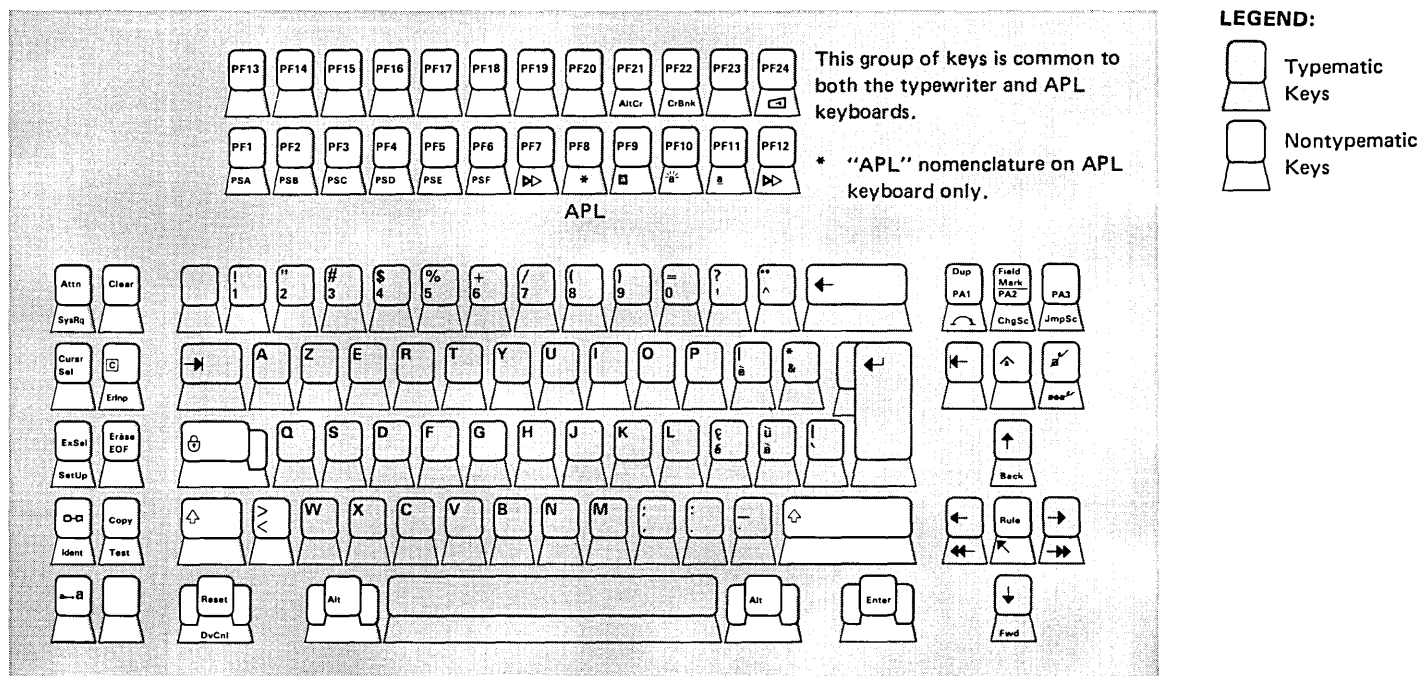


Typewriter Keyboard

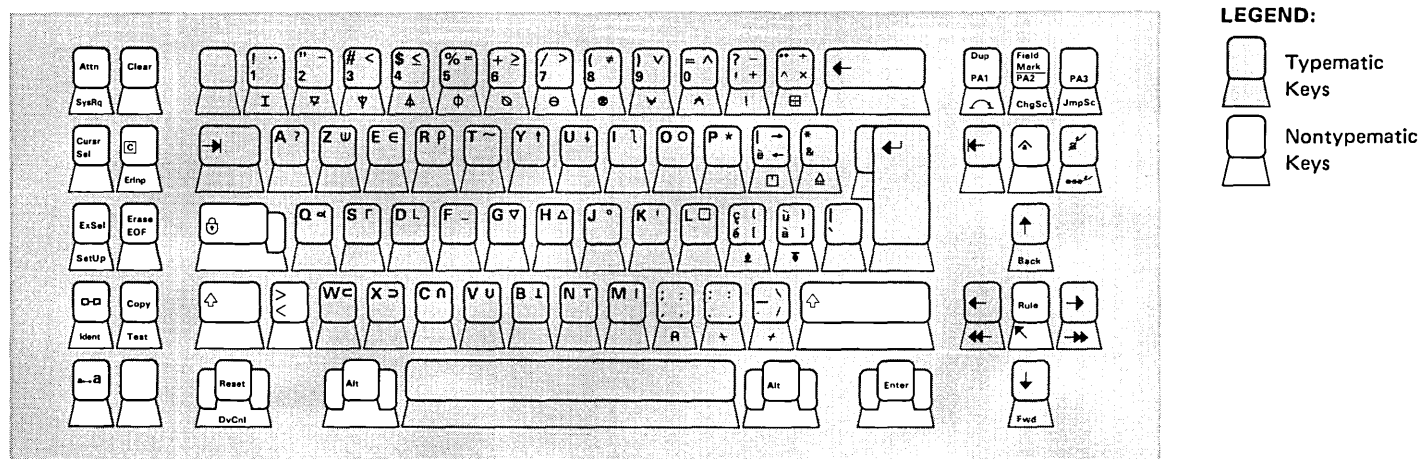


APL Keyboard

Figure 8-2. Austrian/German Keyboards for 3290 Information Panel

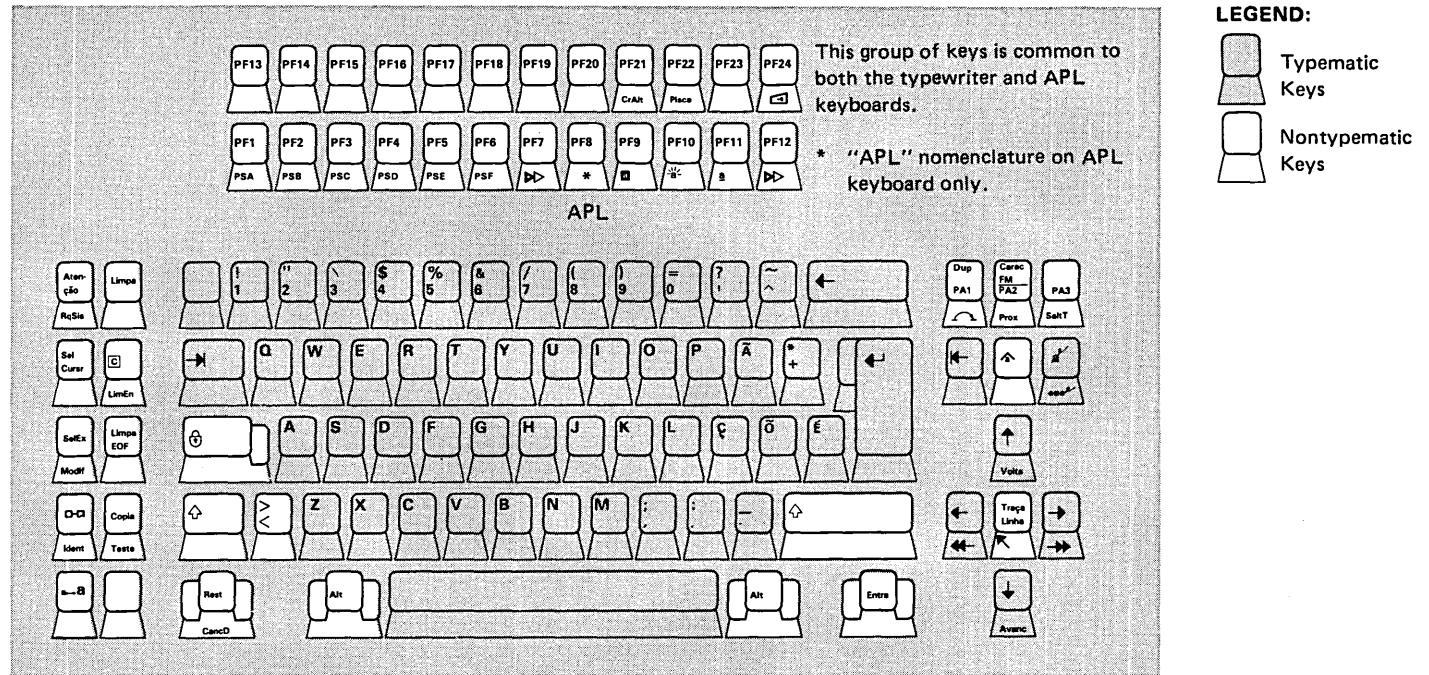


Typewriter Keyboard

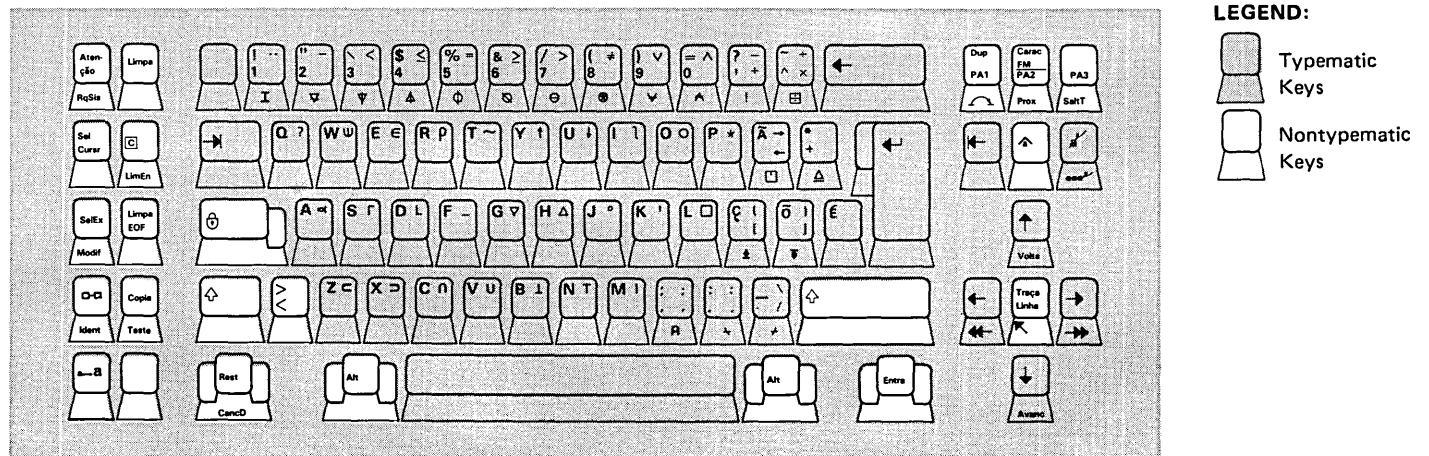


APL Keyboard

Figure 8-3. Belgian Keyboards for 3290 Information Panel

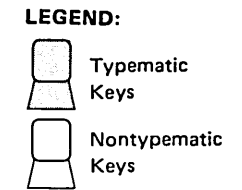
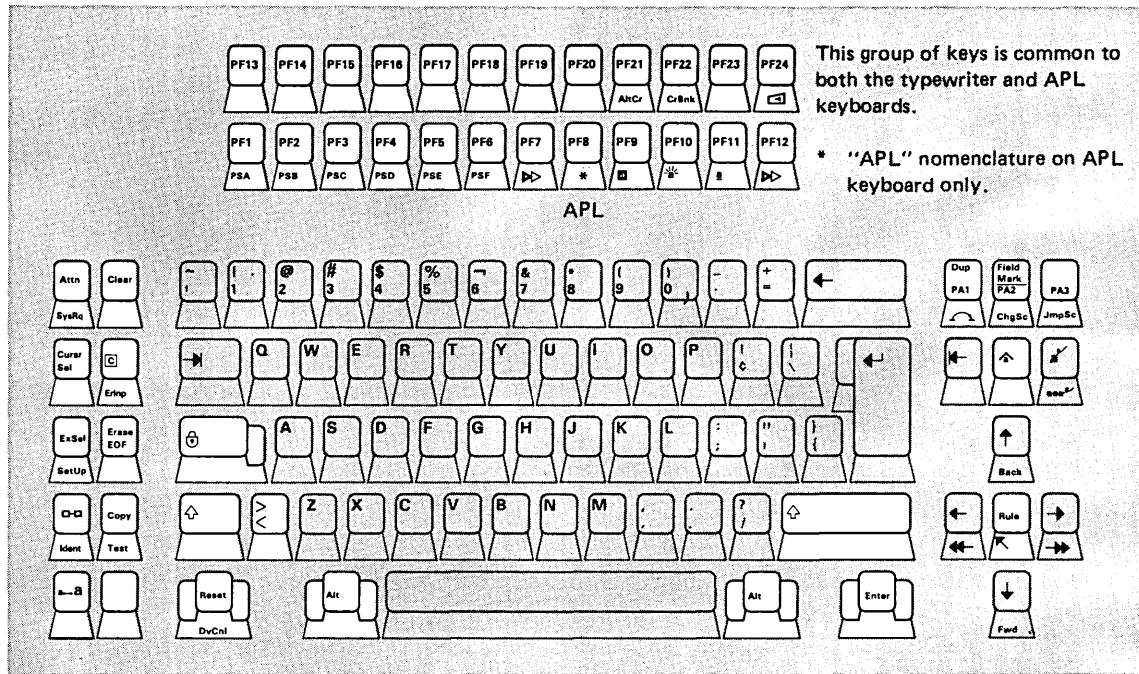


Typewriter Keyboard

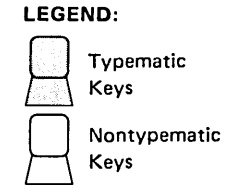
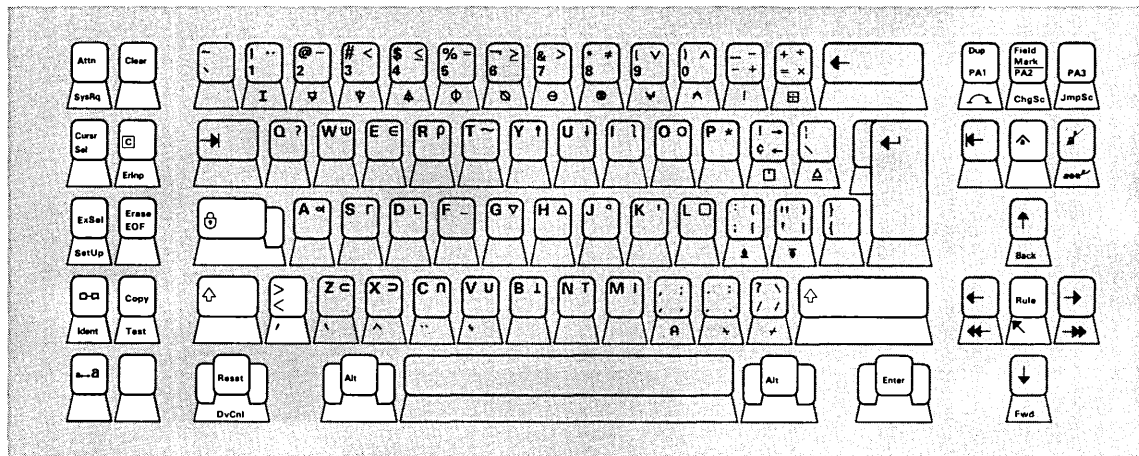


APL Keyboard

Figure 8-4. Brazilian/Portuguese Keyboards for 3290 Information Panel

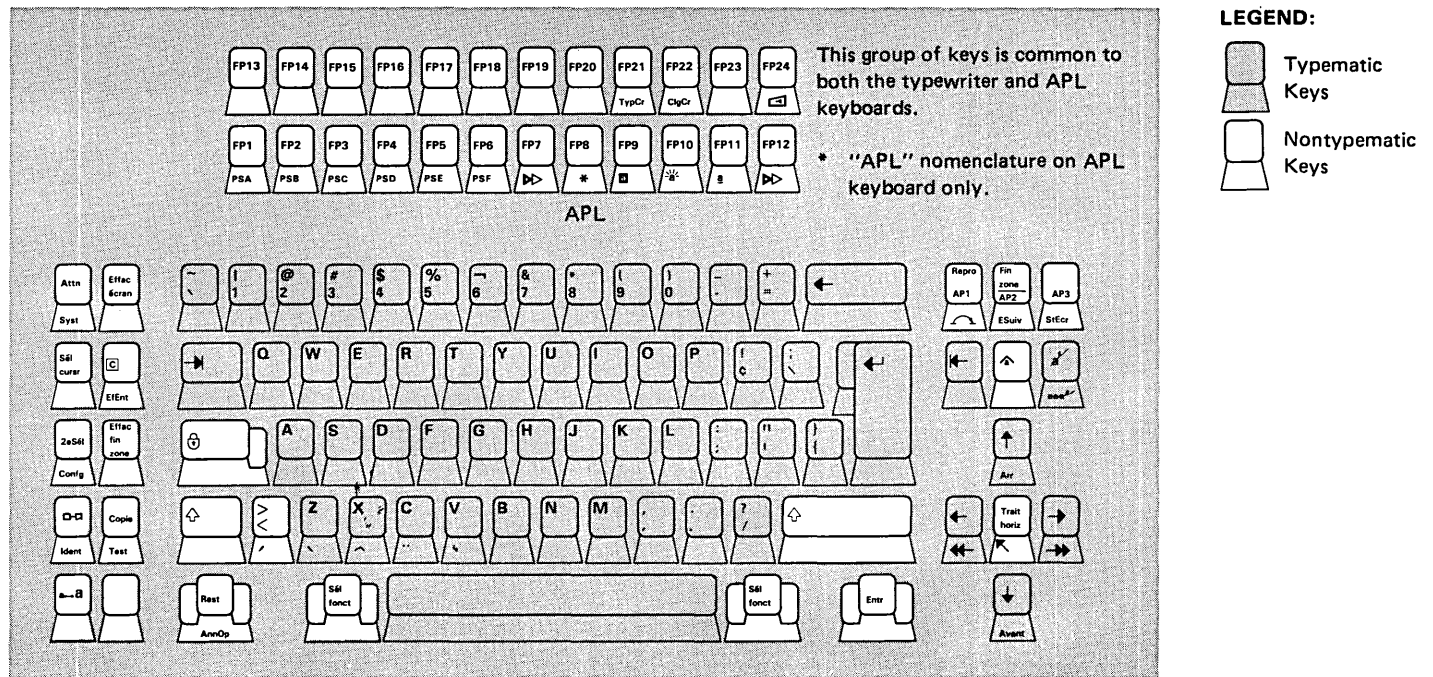


Typewriter Keyboard

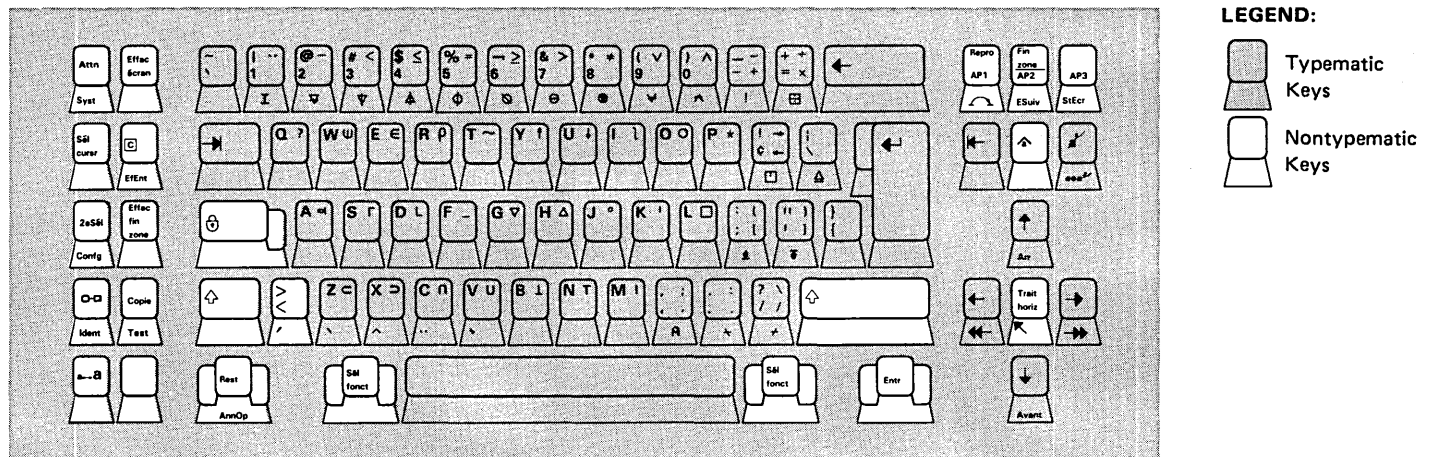


APL Keyboard

Figure 8-5. Canadian-English Bilingual Keyboards for 3290 Information Panel

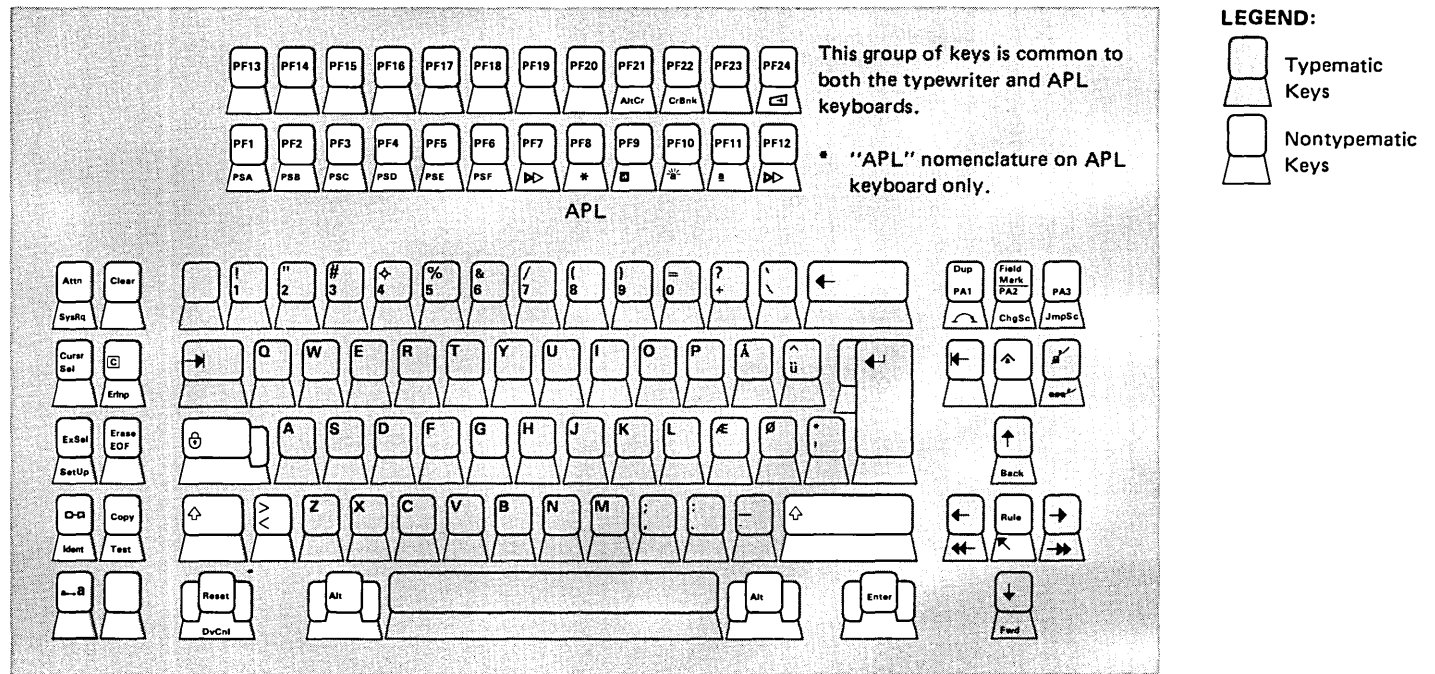


Typewriter Keyboard

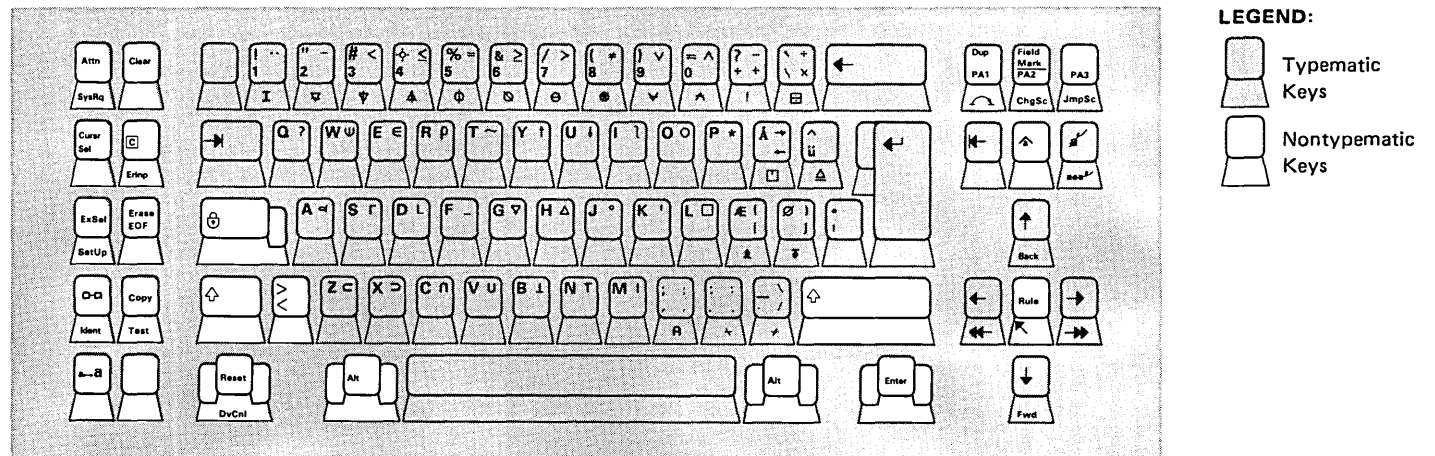


APL Keyboard

Figure 8-6. Canadian-French Bilingual Keyboards for 3290 Information Panel

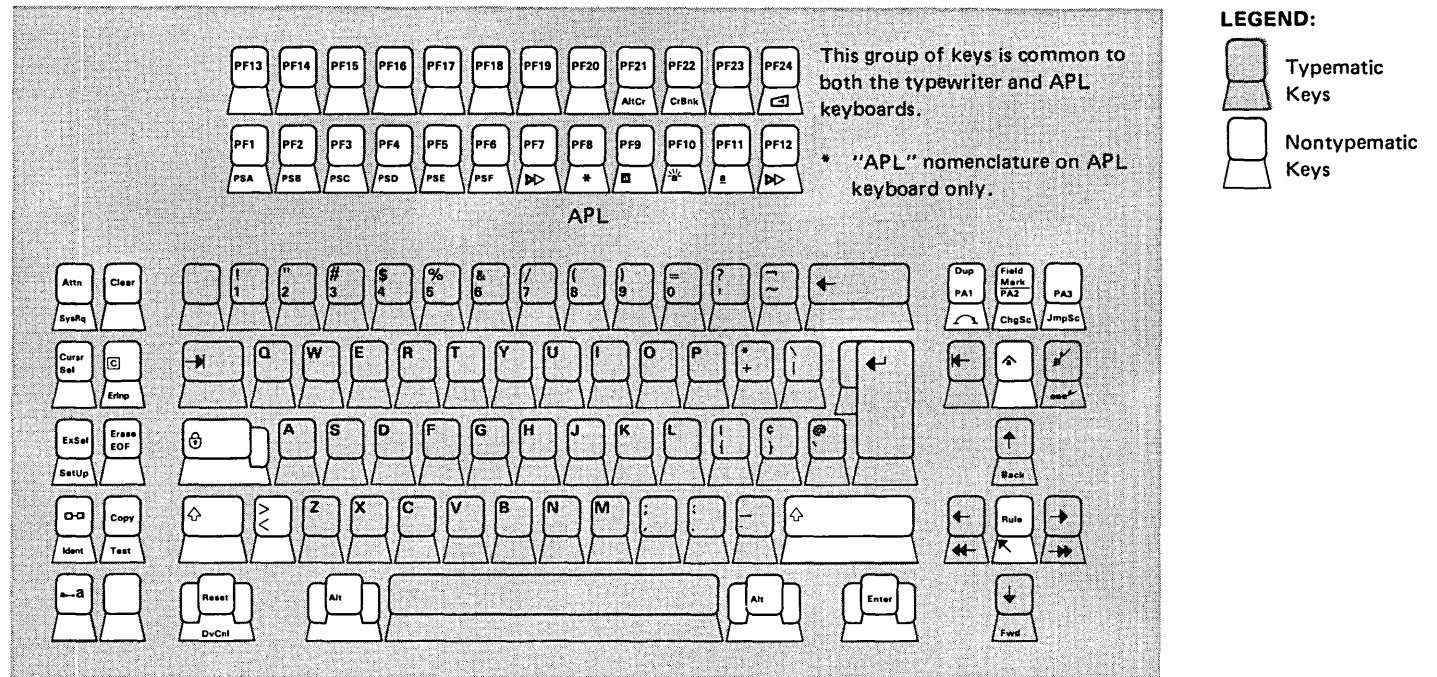


Typewriter Keyboard

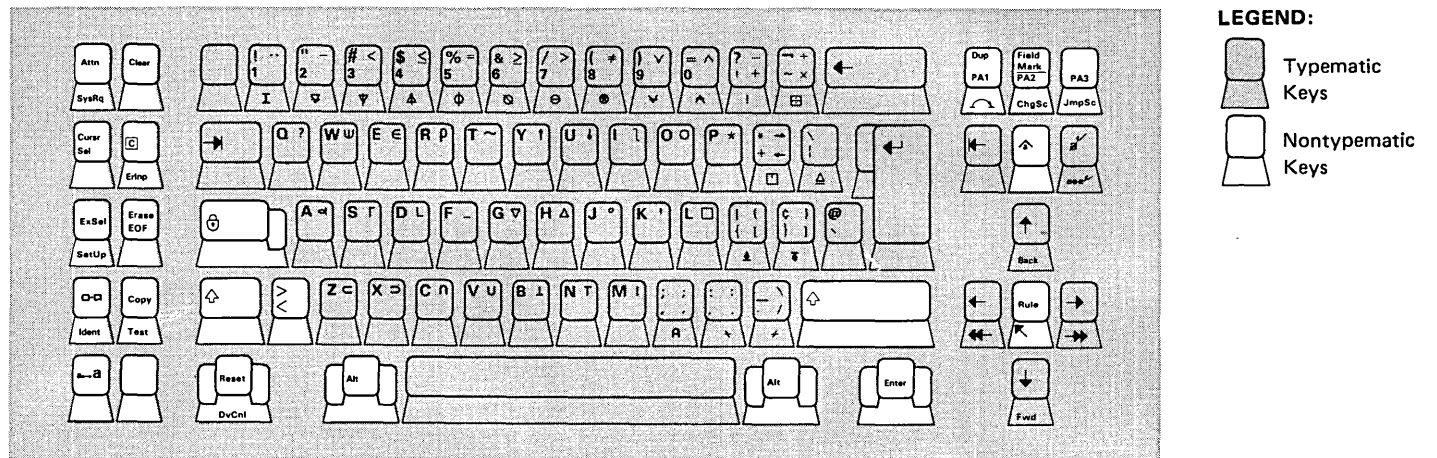


APL Keyboard

Figure 8-7. Danish Keyboards for 3290 Information Panel

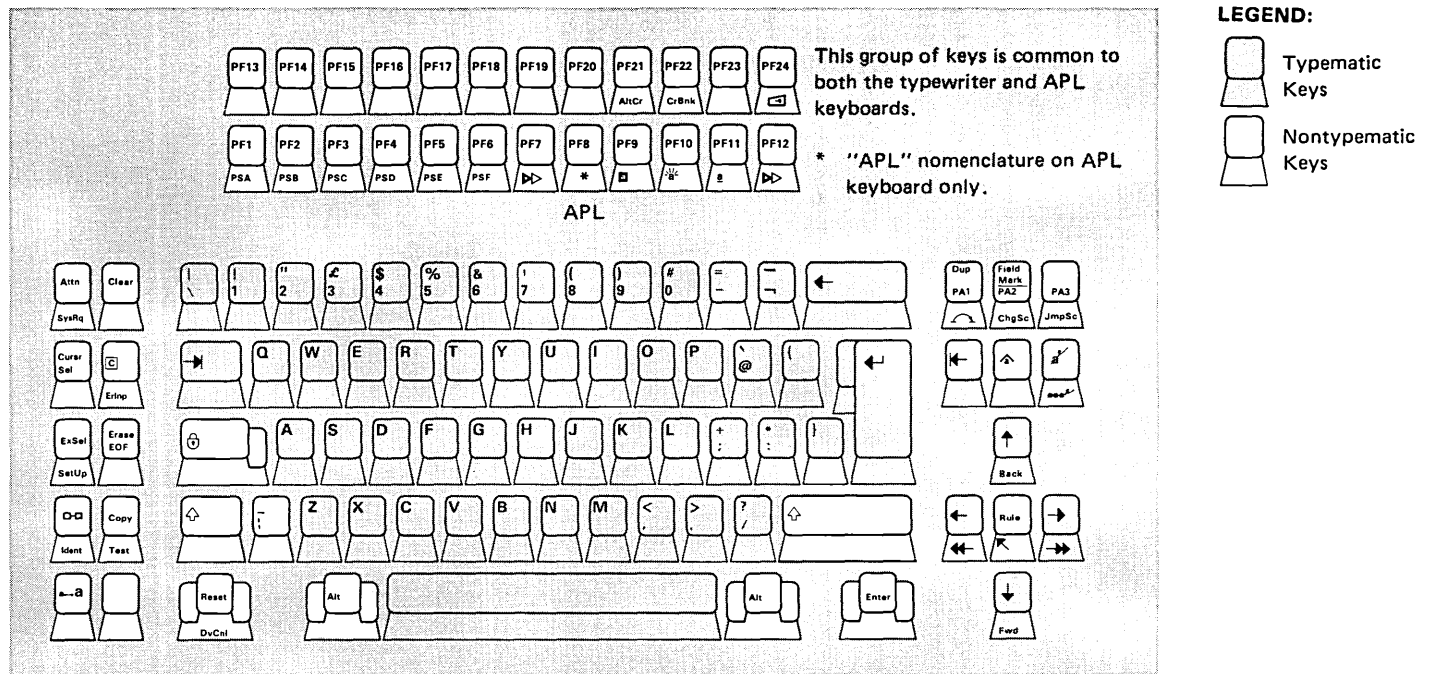


Typewriter Keyboard

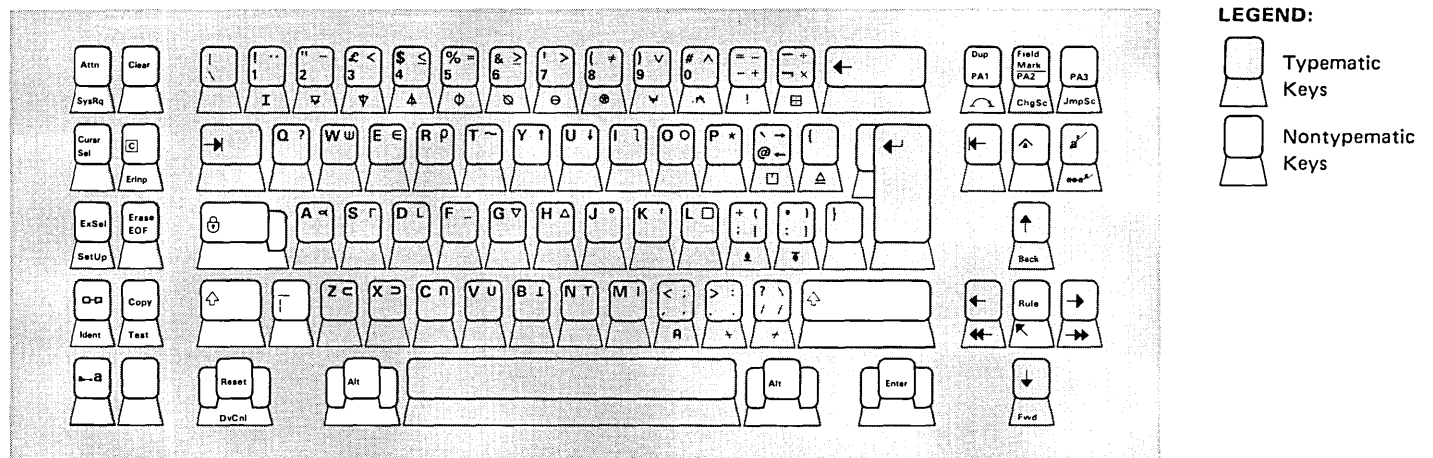


APL Keyboard

Figure 8-8. EBCDIC (World Trade) Keyboards for 3290 Information Panel

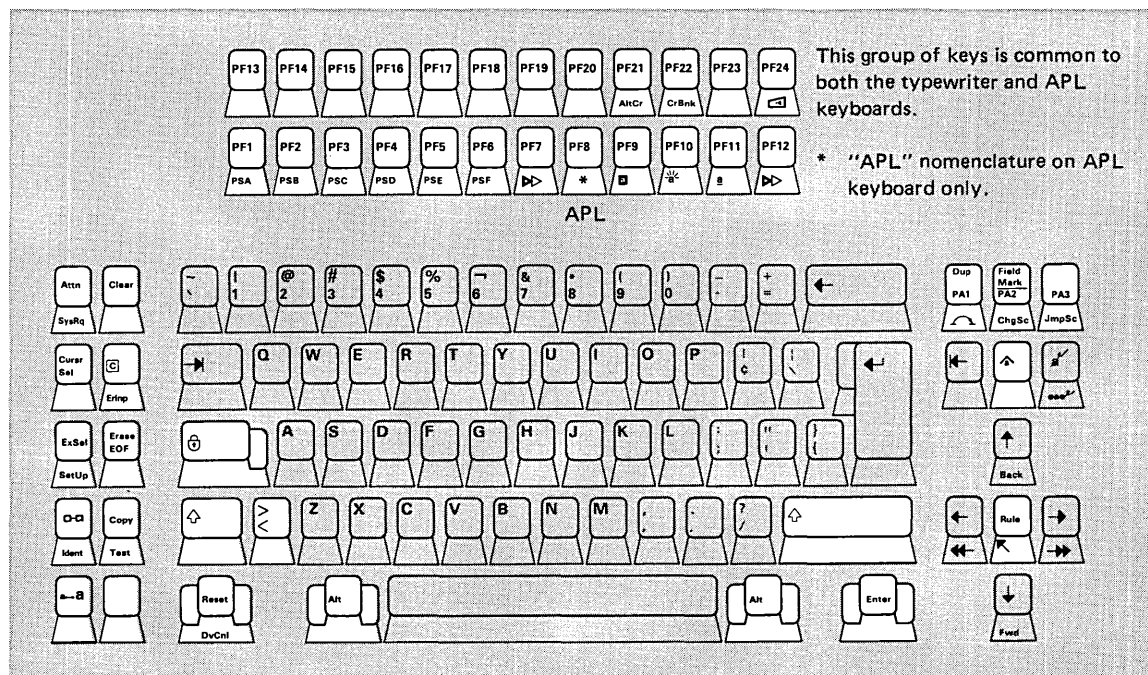


Typewriter Keyboard

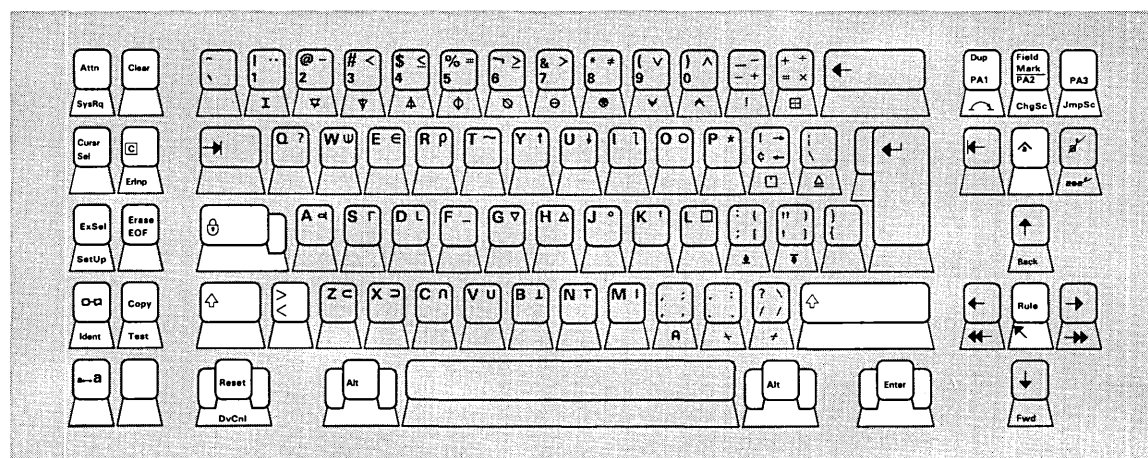


APL Keyboard

Figure 8-9. English (U.K.) Keyboards for 3290 Information Panel

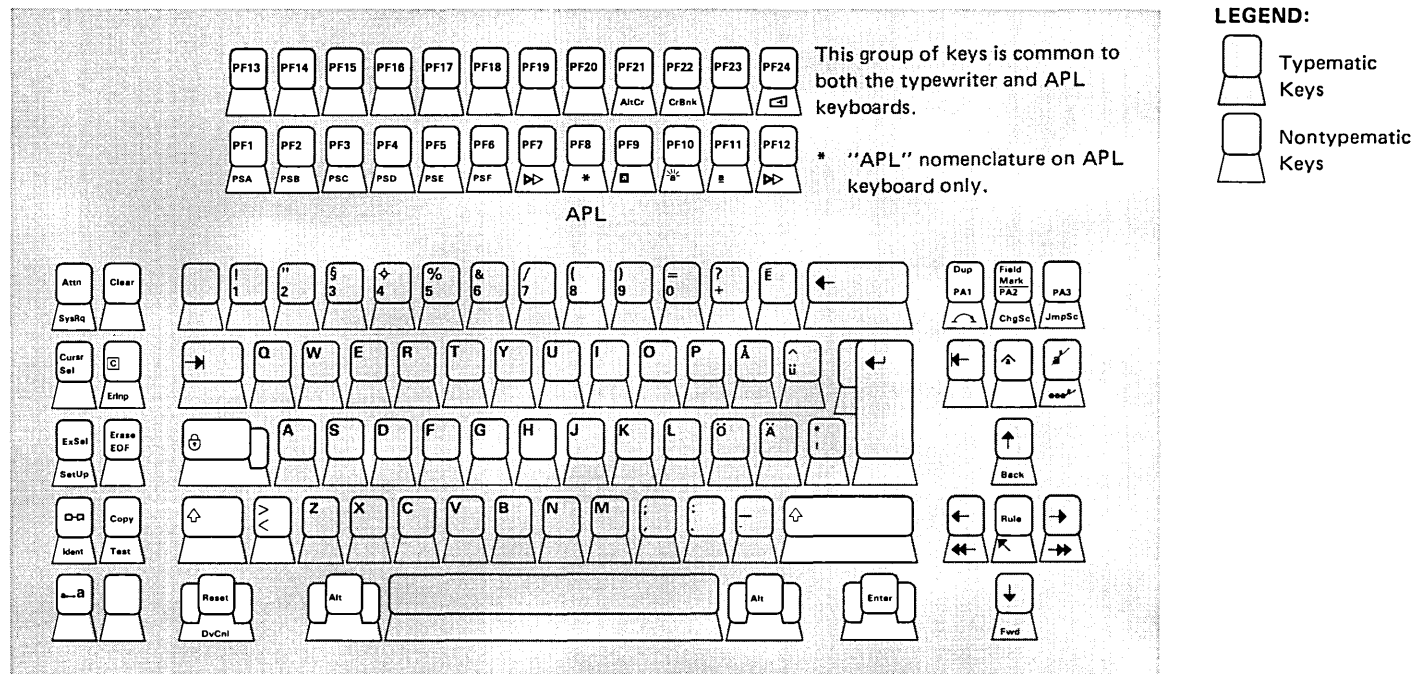


Typewriter Keyboard

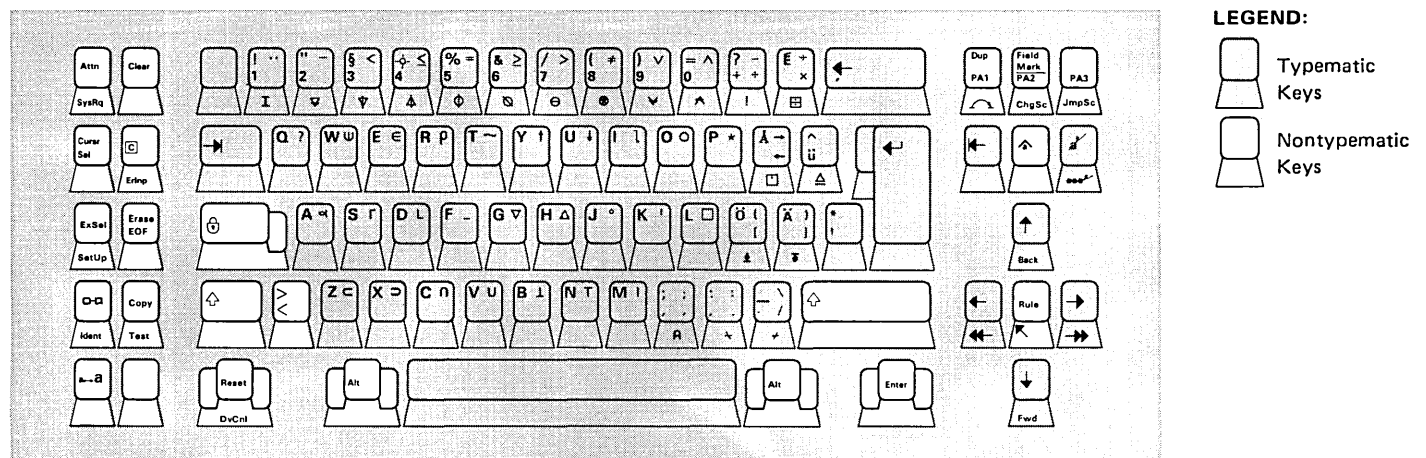


APL Keyboard

Figure 8-10. English (U.S.) Keyboards for 3290 Information Panel

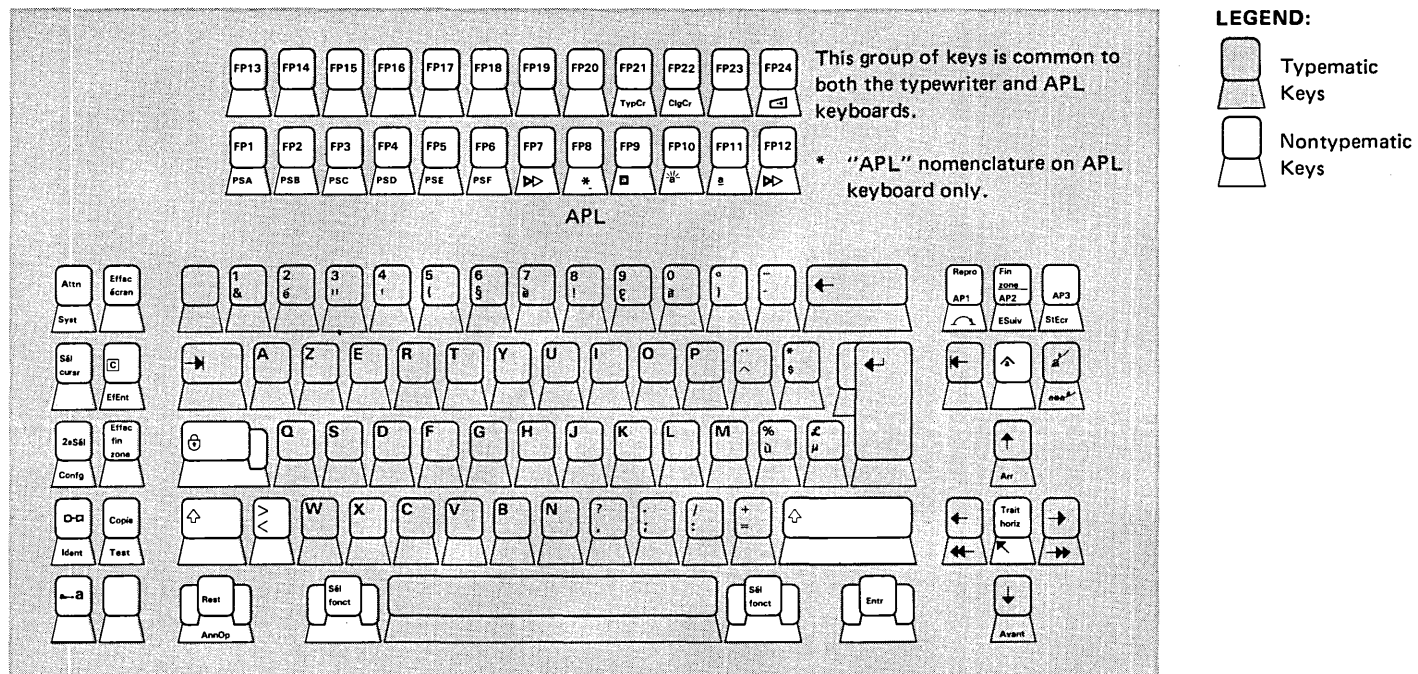


Typewriter Keyboard

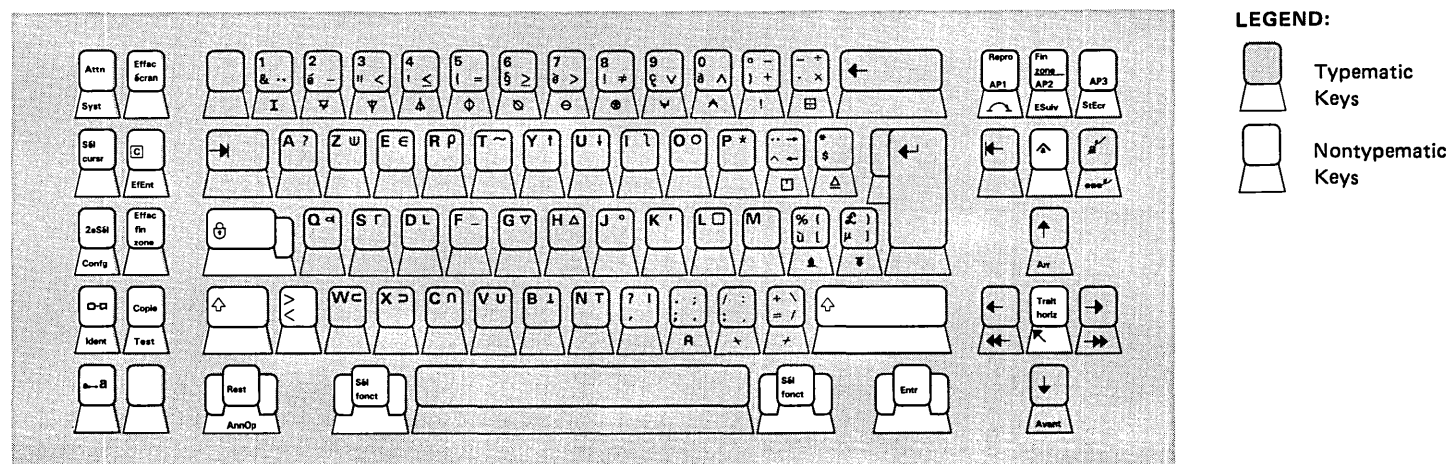


APL Keyboard

Figure 8-11. Finnish Keyboards for 3290 Information Panel

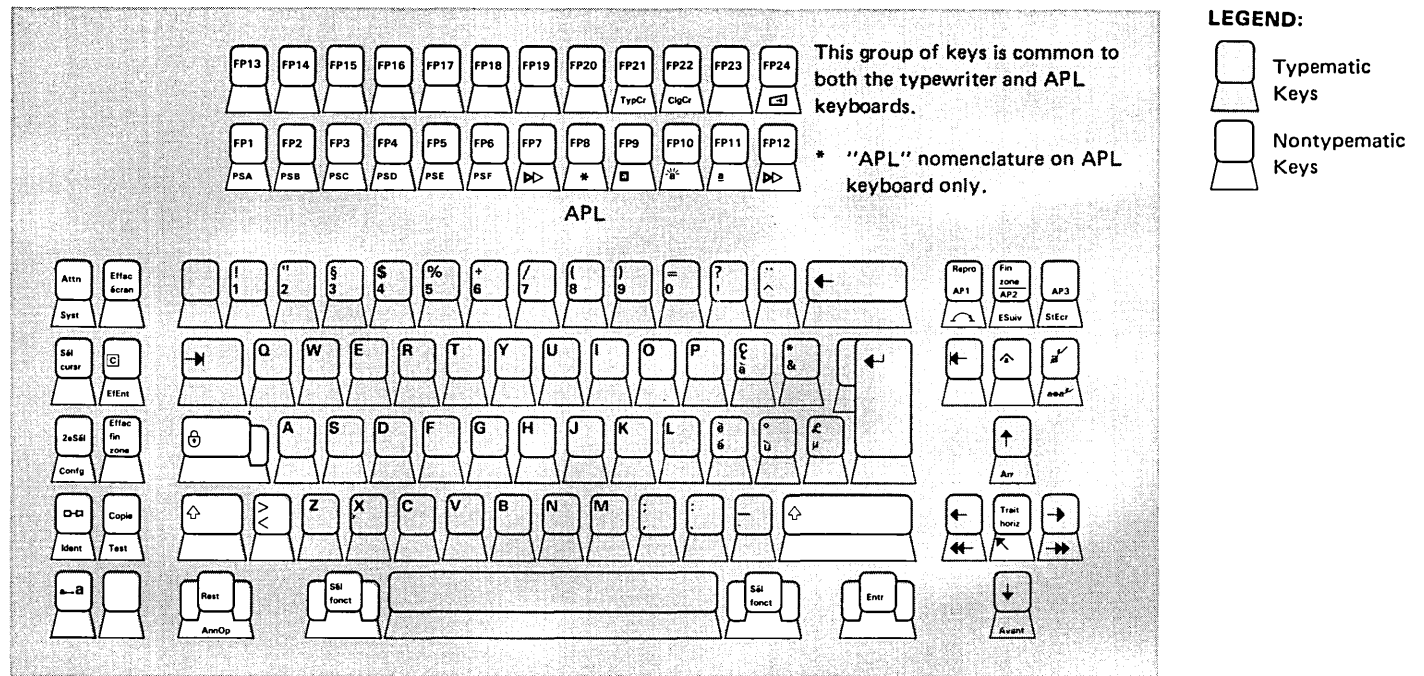


Typewriter Keyboard

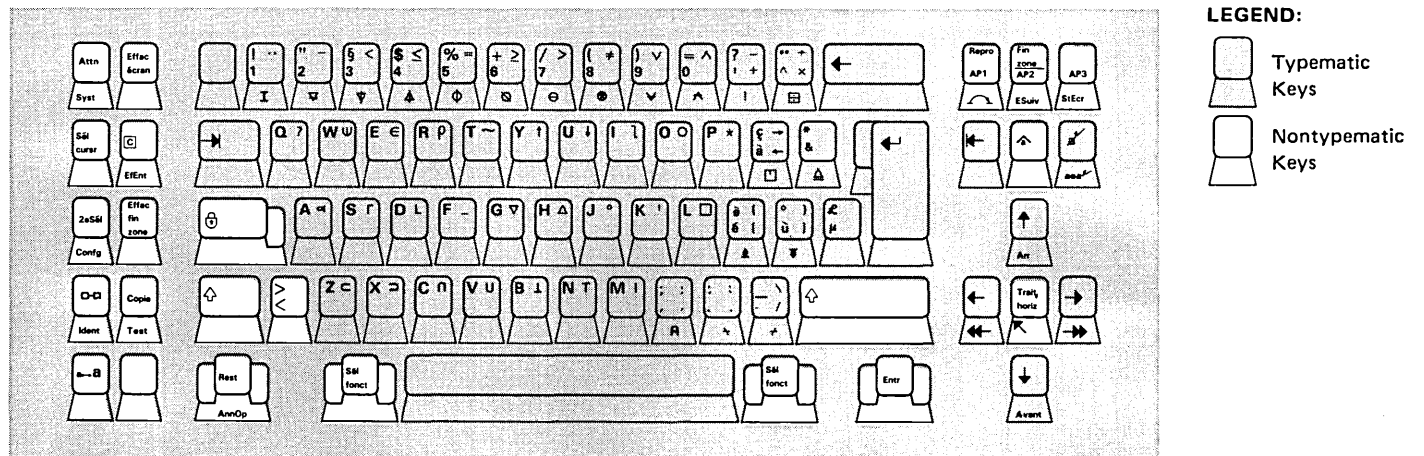


APL Keyboard

Figure 8-12. French (AZERTY) Keyboards for 3290 Information Panel

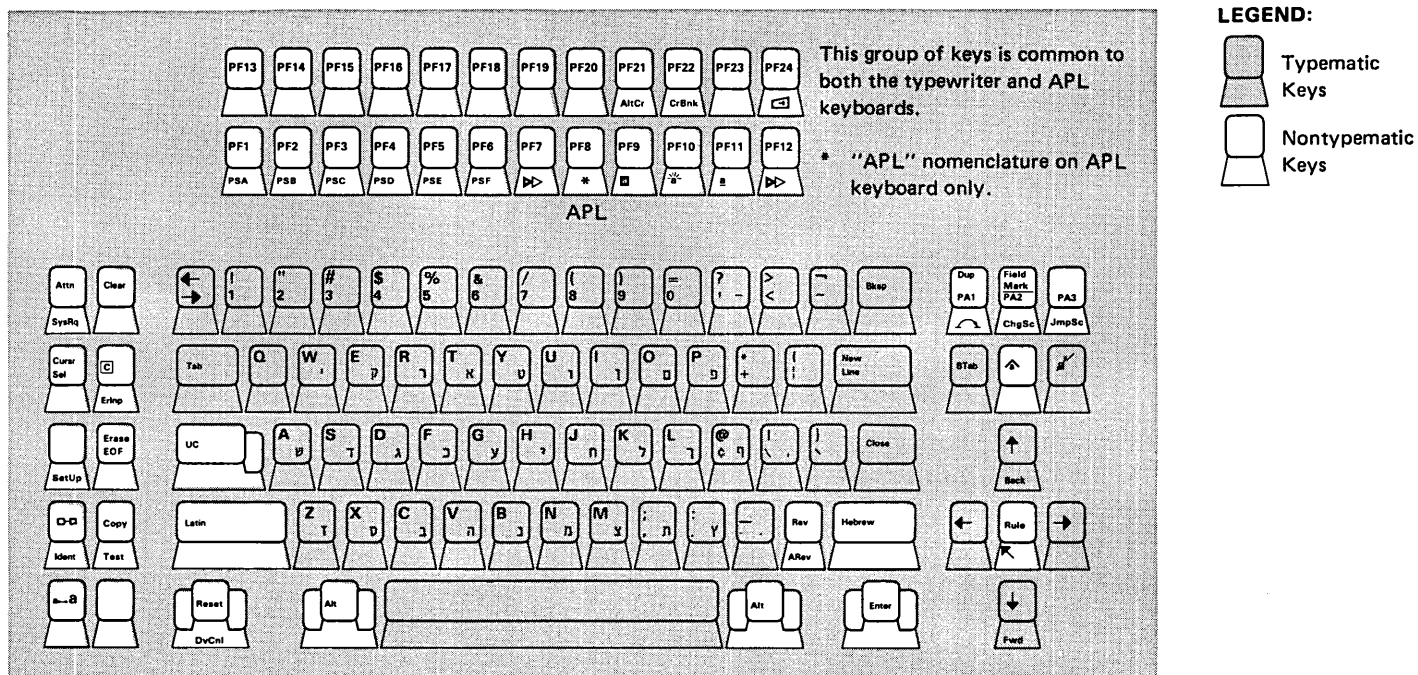


Typewriter Keyboard

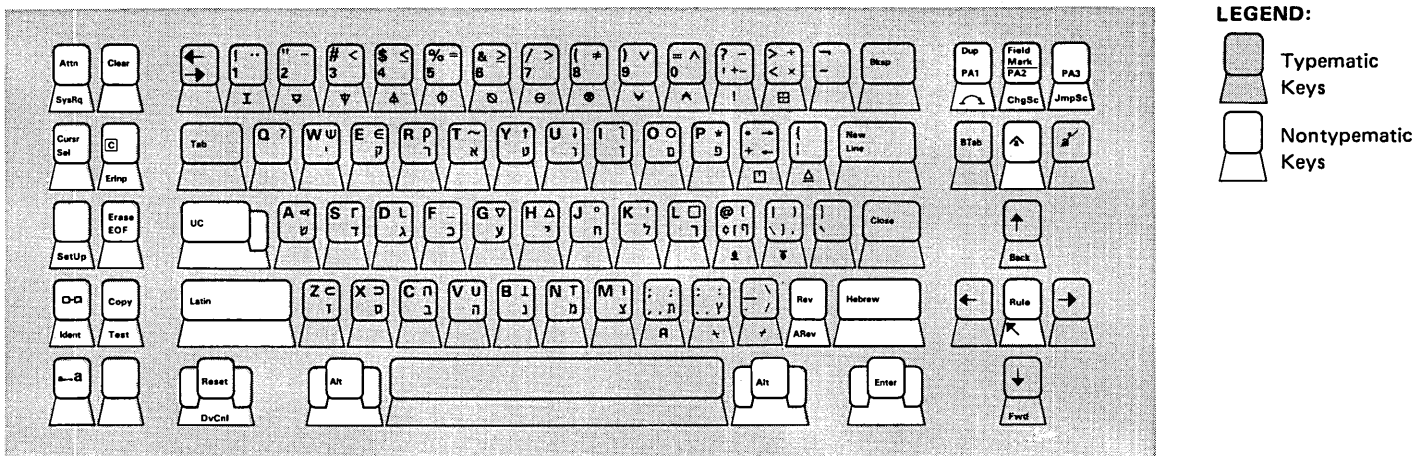


APL Keyboard

Figure 8-13. French (QWERTY) Keyboards for 3290 Information Panel

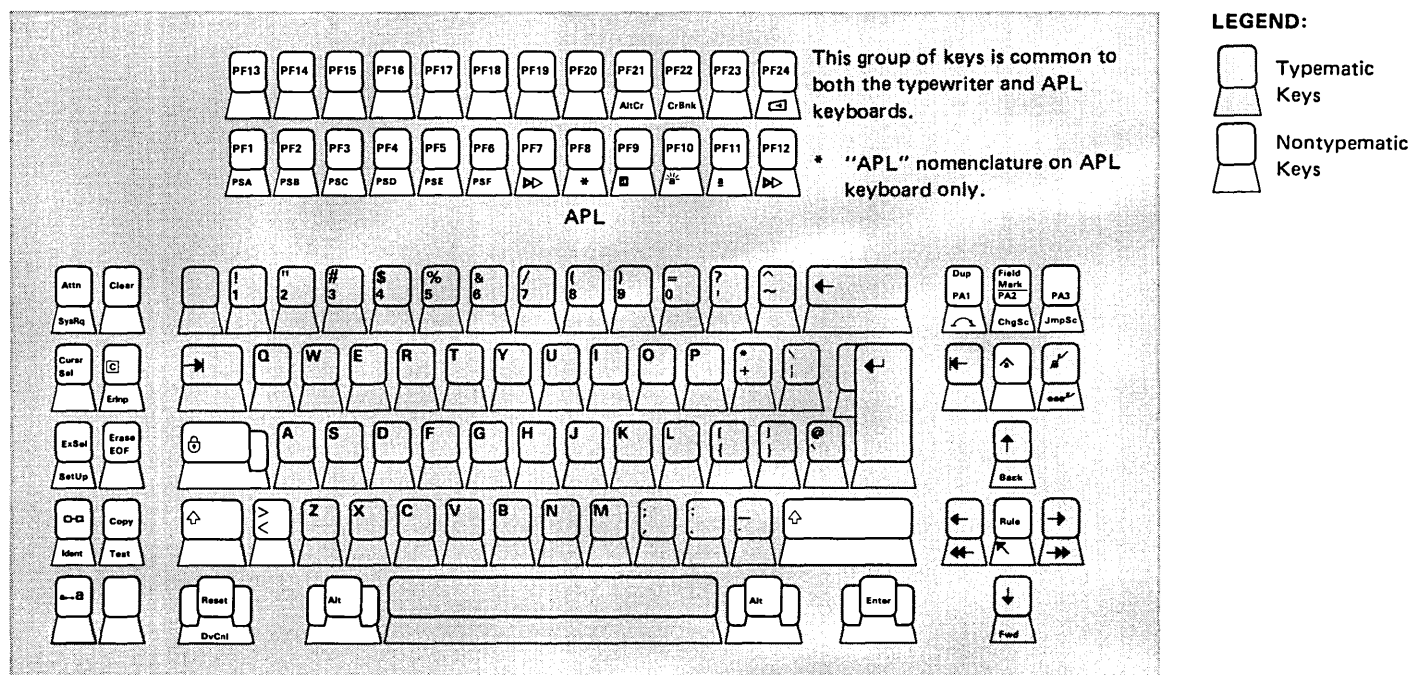


Typewriter Keyboard

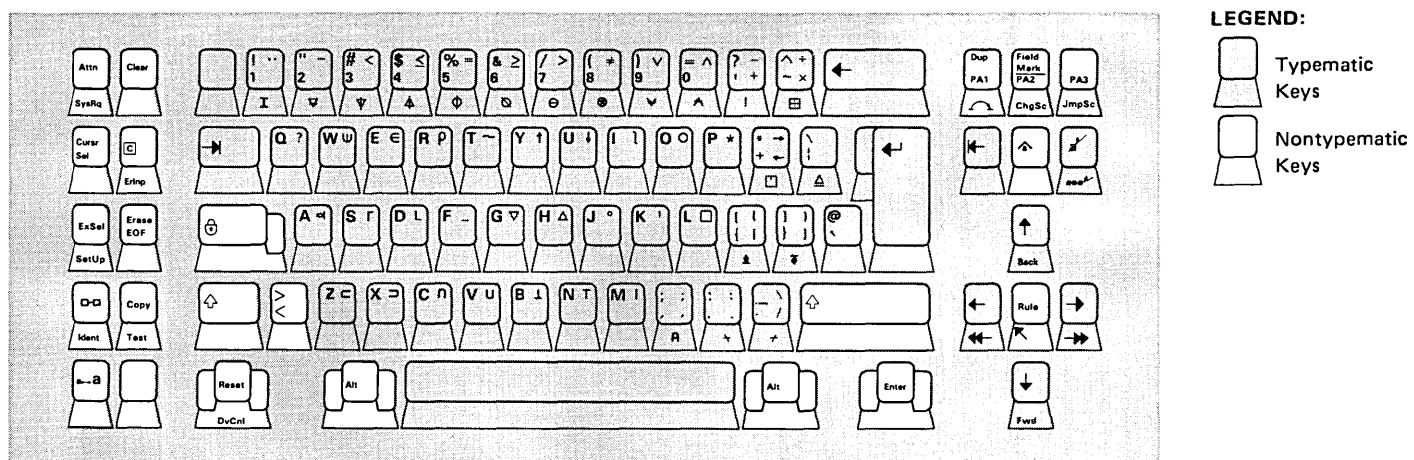


APL Keyboard

Figure 8-14. Hebrew Keyboards for 3290 Information Panel

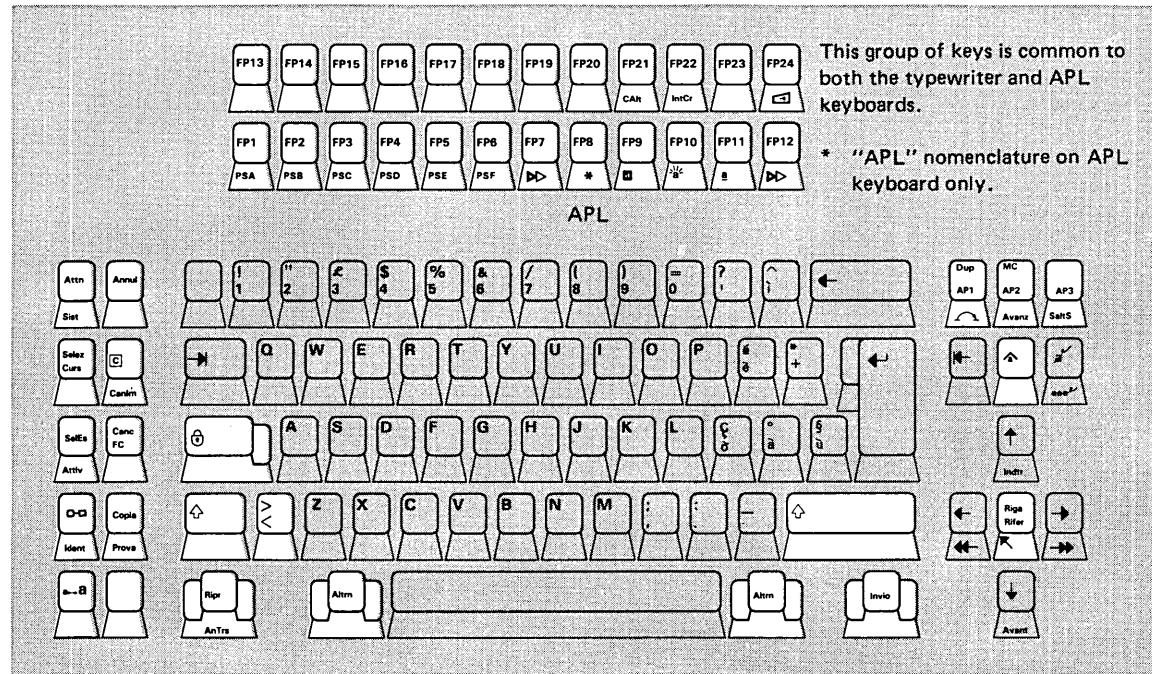


Typewriter Keyboard

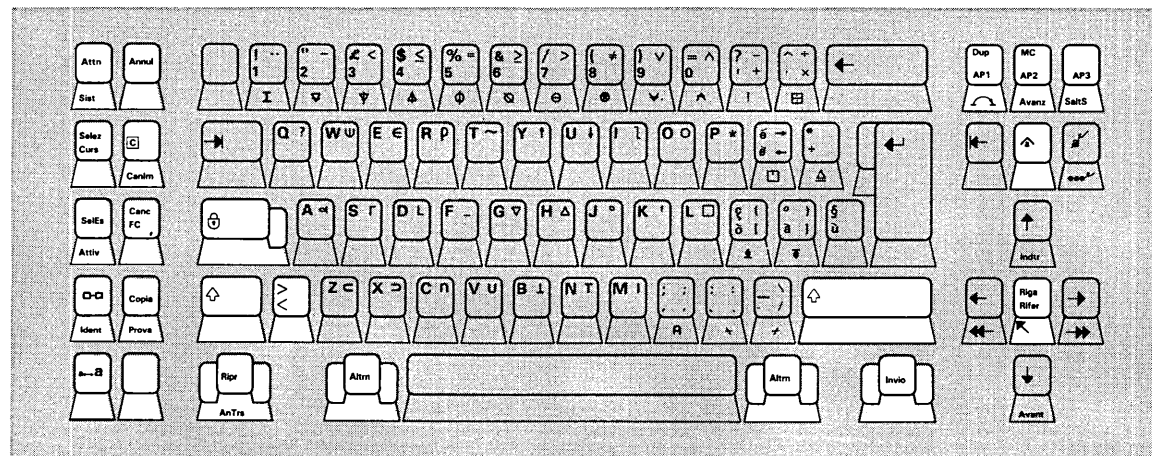


APL Keyboard

Figure 8-15. International Keyboards for 3290 Information Panel

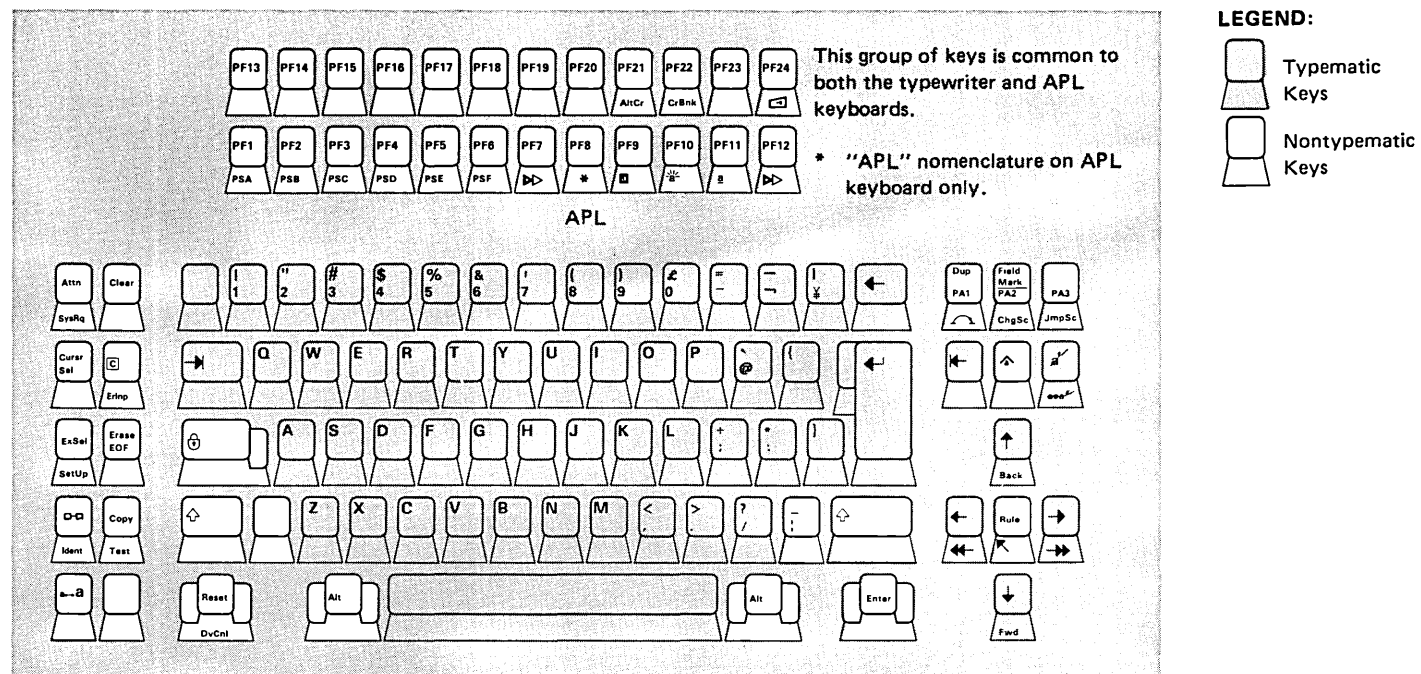


Typewriter Keyboard

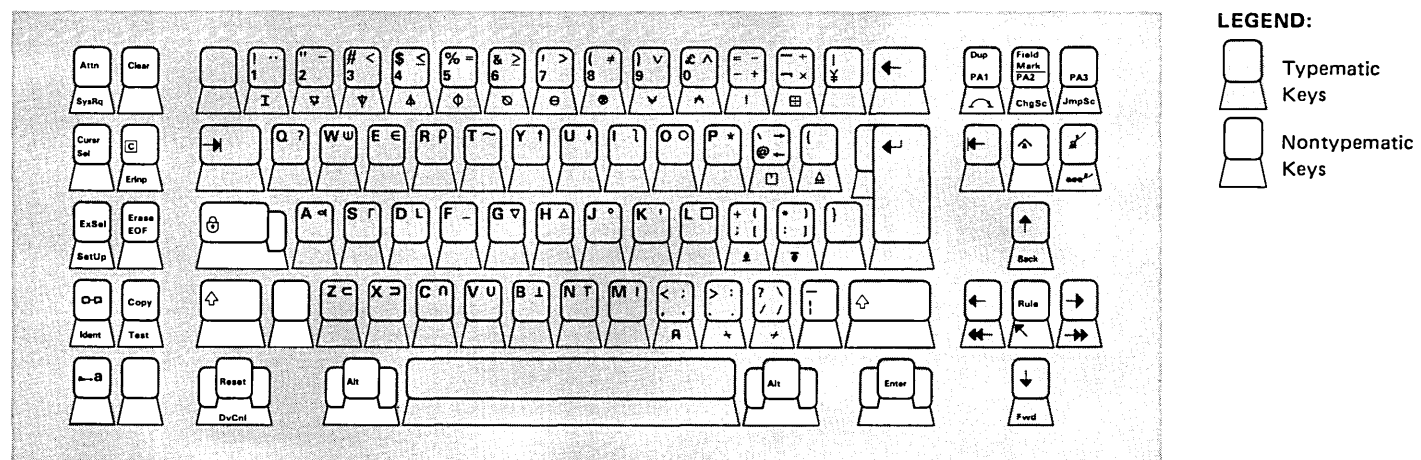


APL Keyboard

Figure 8-16. Italian Keyboards for 3290 Information Panel

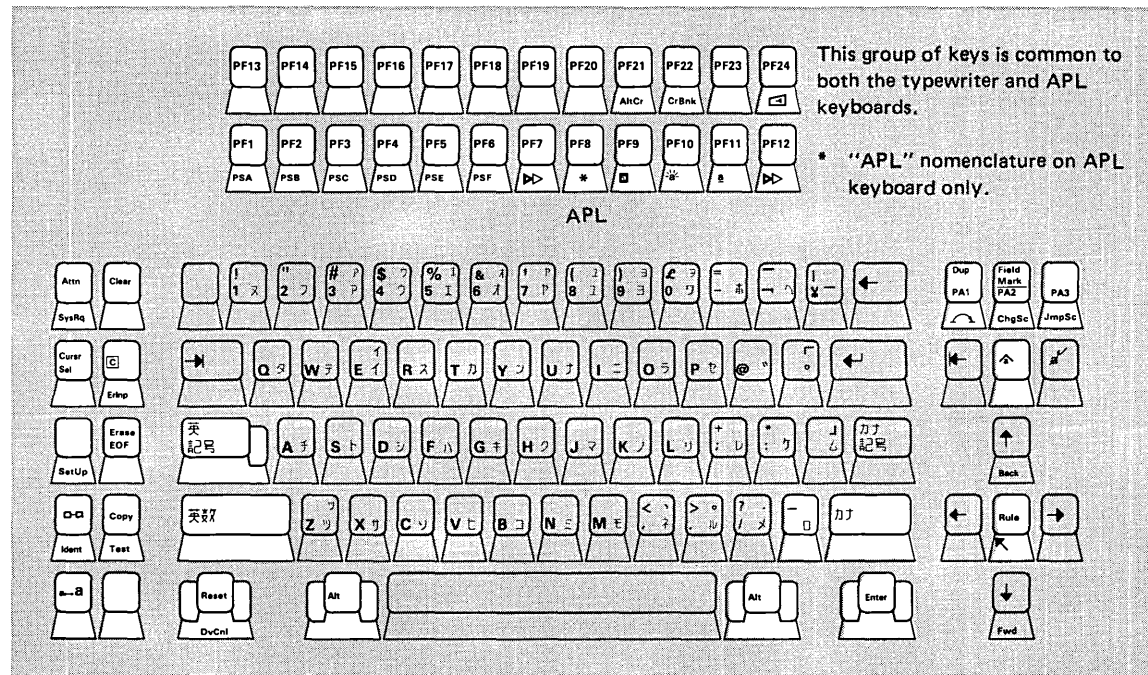


Typewriter Keyboard

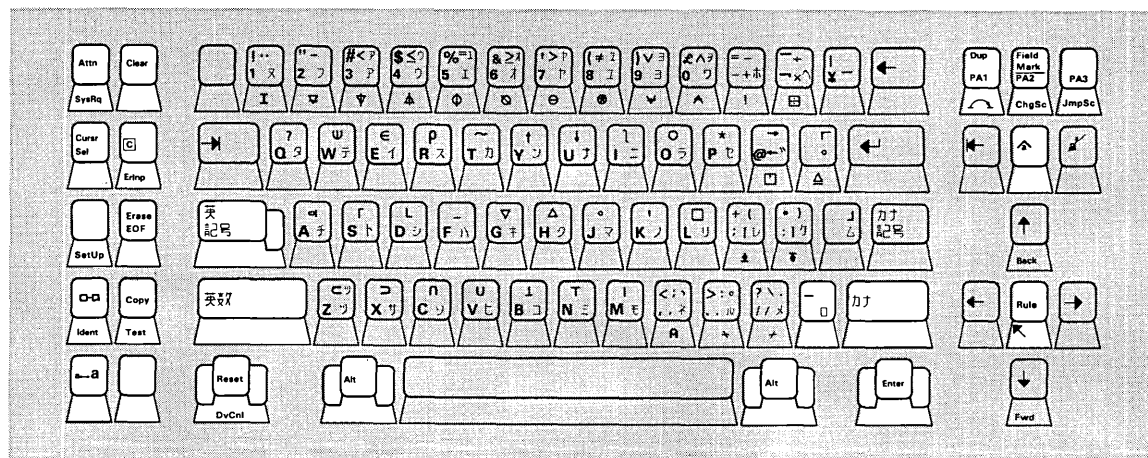


APL Keyboard

Figure 8-17. Japanese English Keyboards for 3290 Information Panel

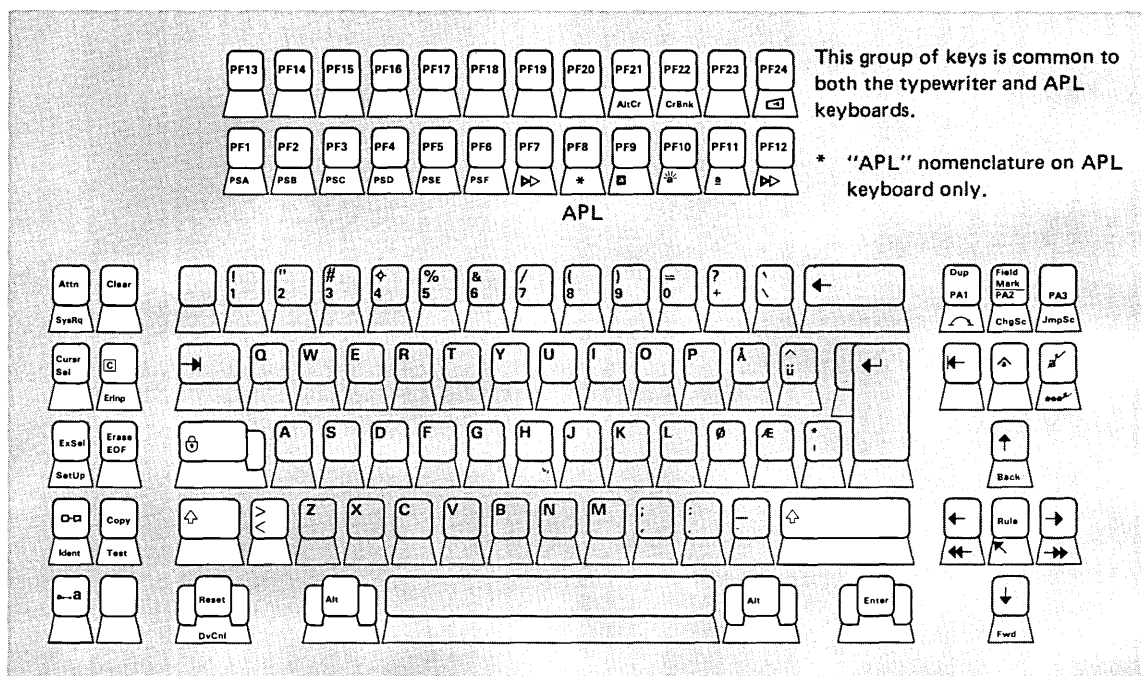


Typewriter Keyboard

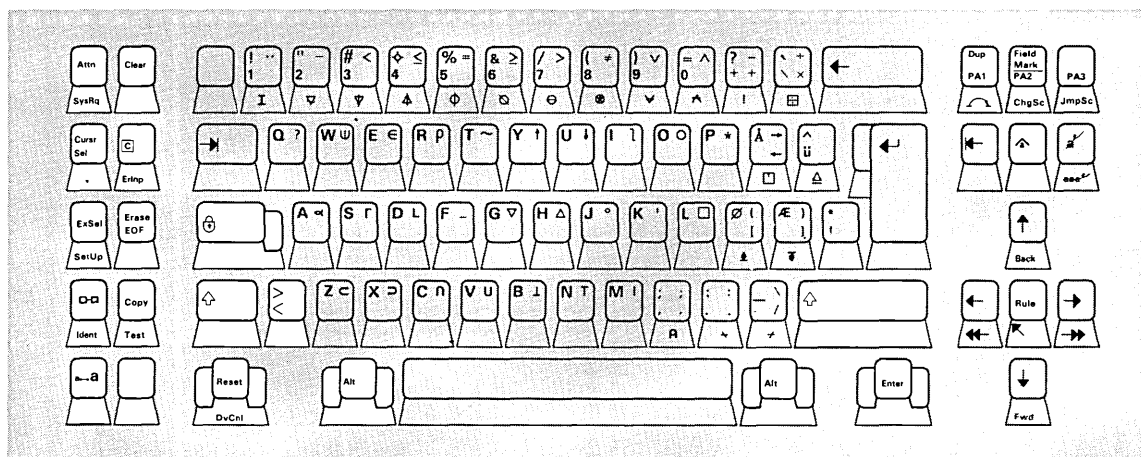


APL Keyboard

Figure 8-18. Japanese Katakana Keyboards for 3290 Information Panel



Typewriter Keyboard



APL Keyboard

Figure 8-19. Norwegian Keyboards for 3290 Information Panel

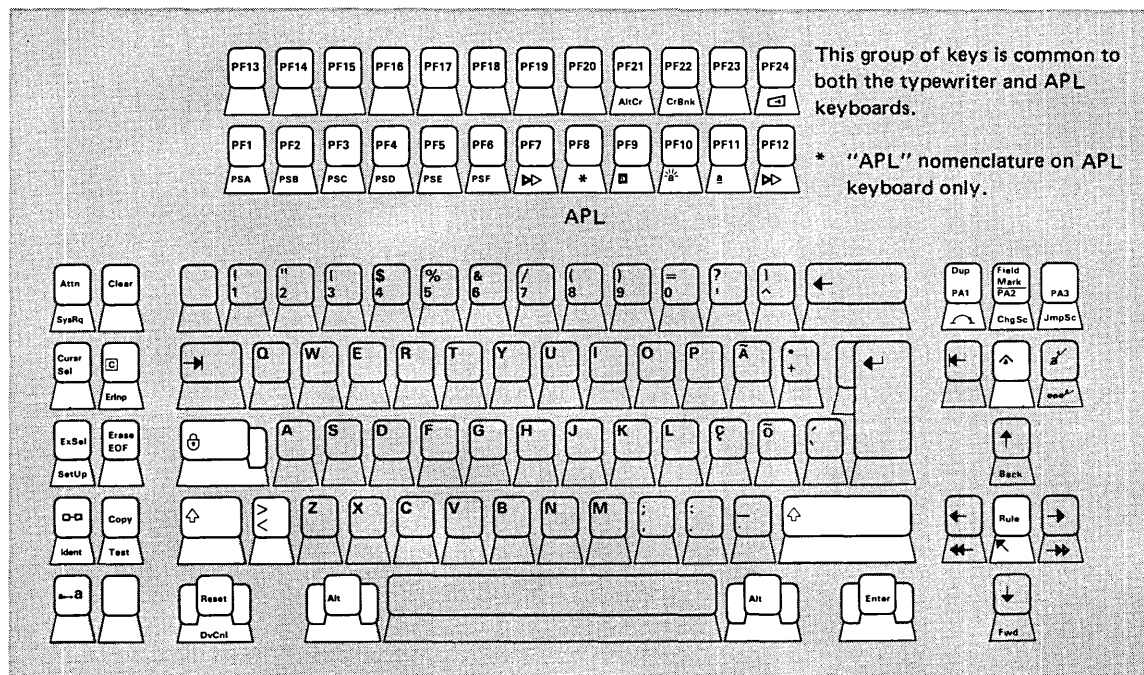
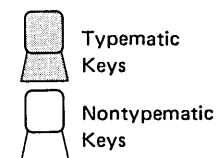
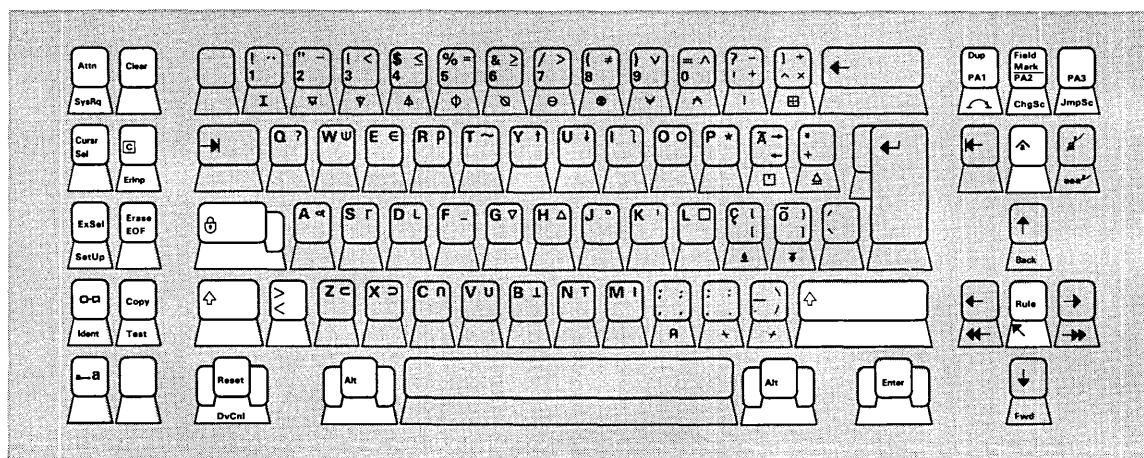
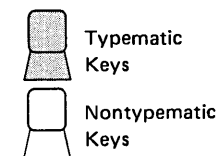
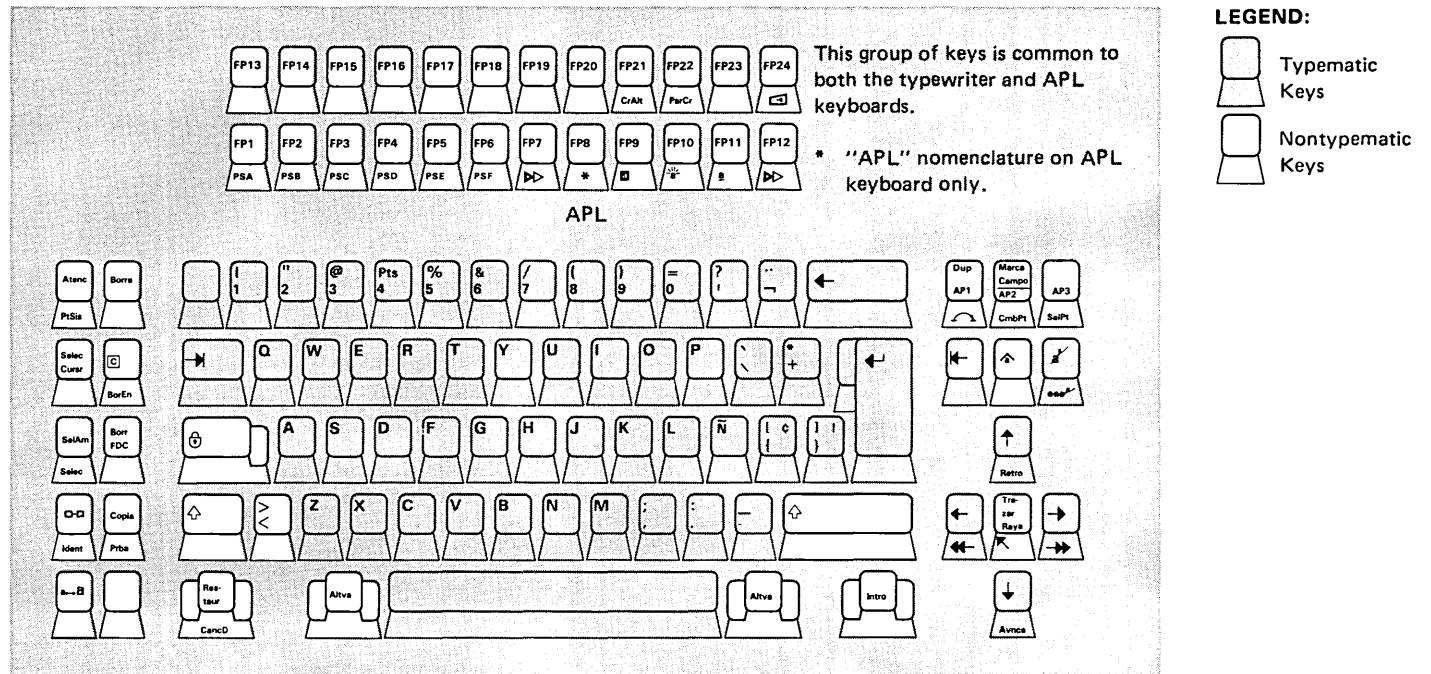
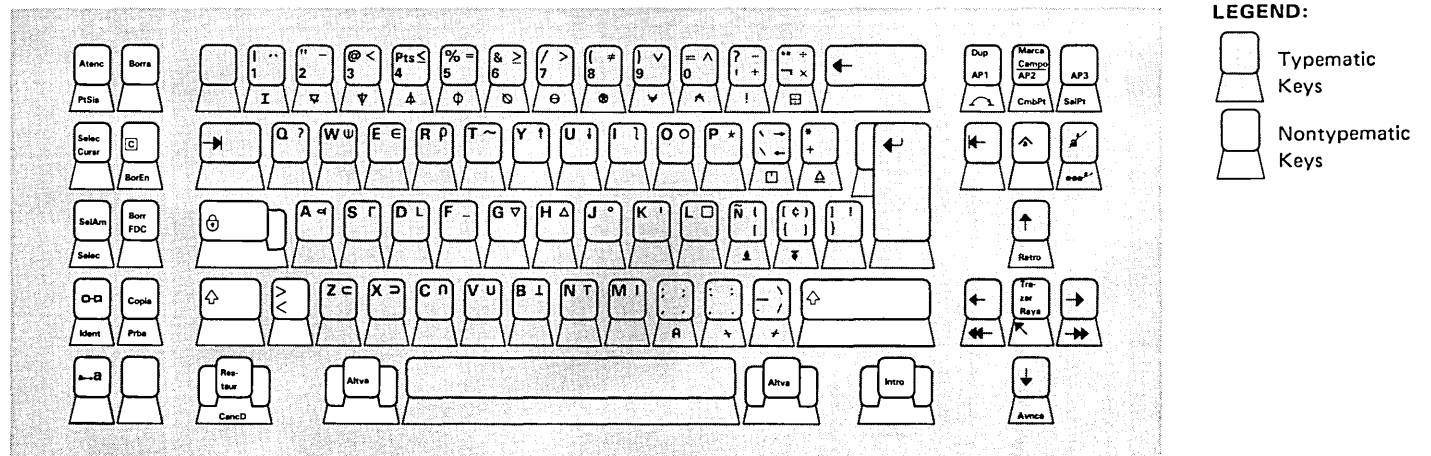
**LEGEND:****Typewriter Keyboard****LEGEND:****APL Keyboard**

Figure 8-20. Portuguese Keyboards for 3290 Information Panel

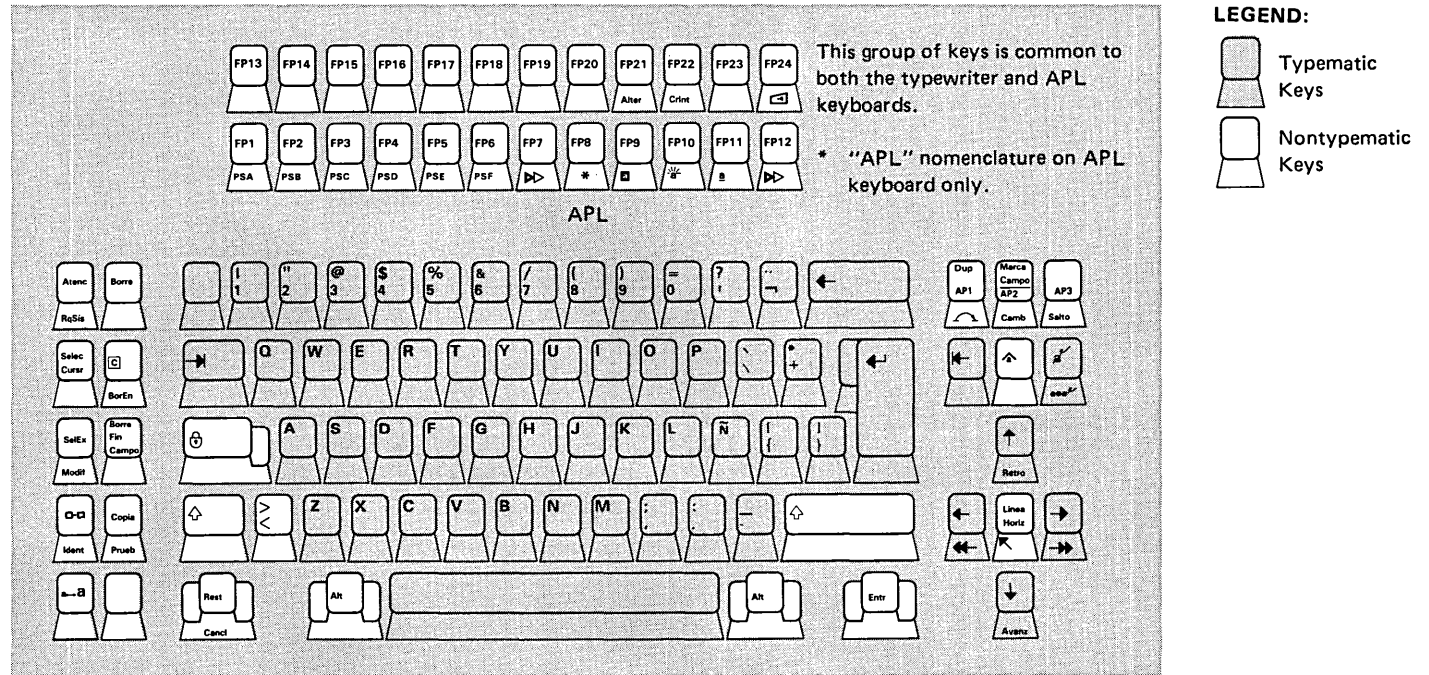


Typewriter Keyboard



APL Keyboard

Figure 8-21. Spanish Keyboards for 3290 Information Panel



Typewriter Keyboard

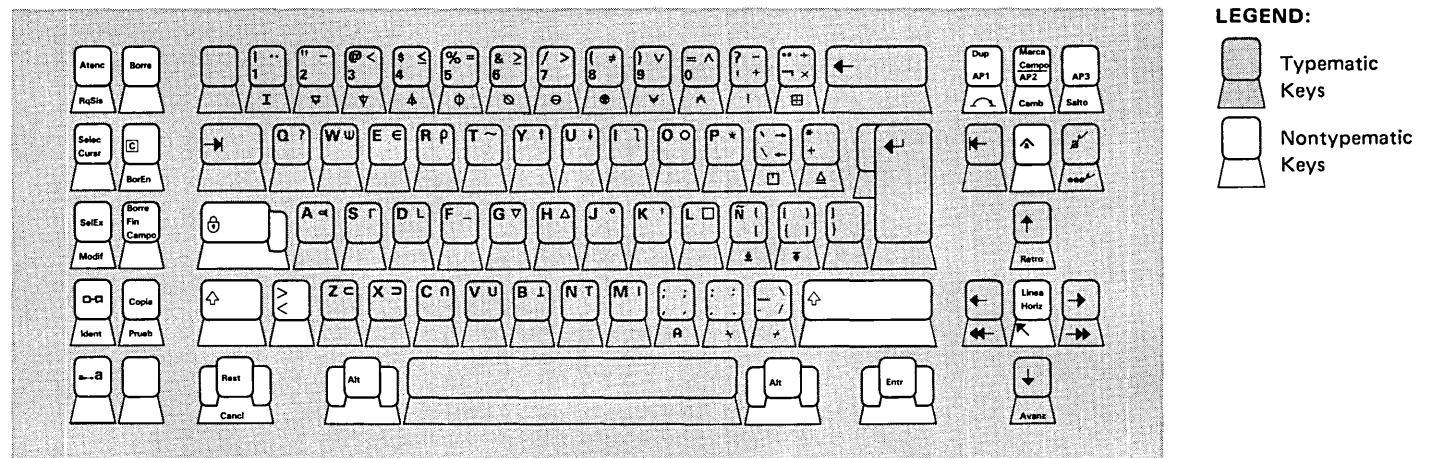
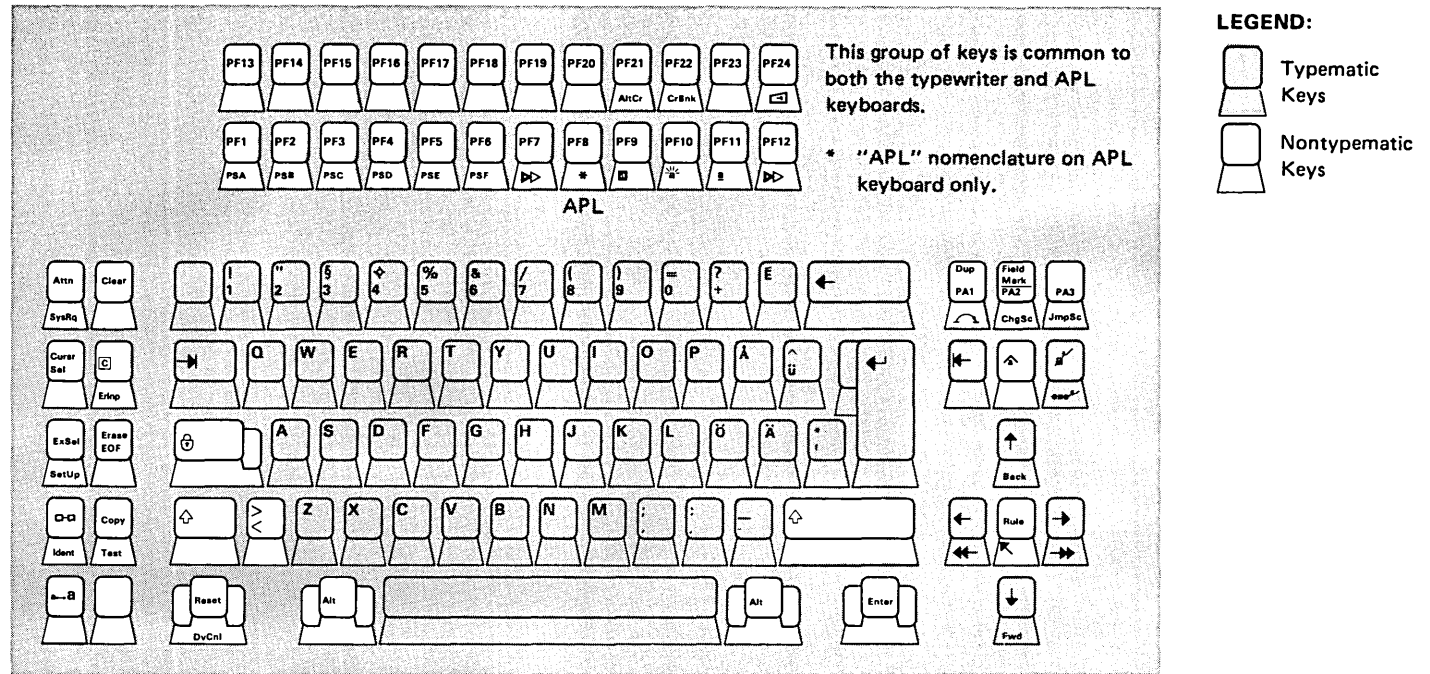
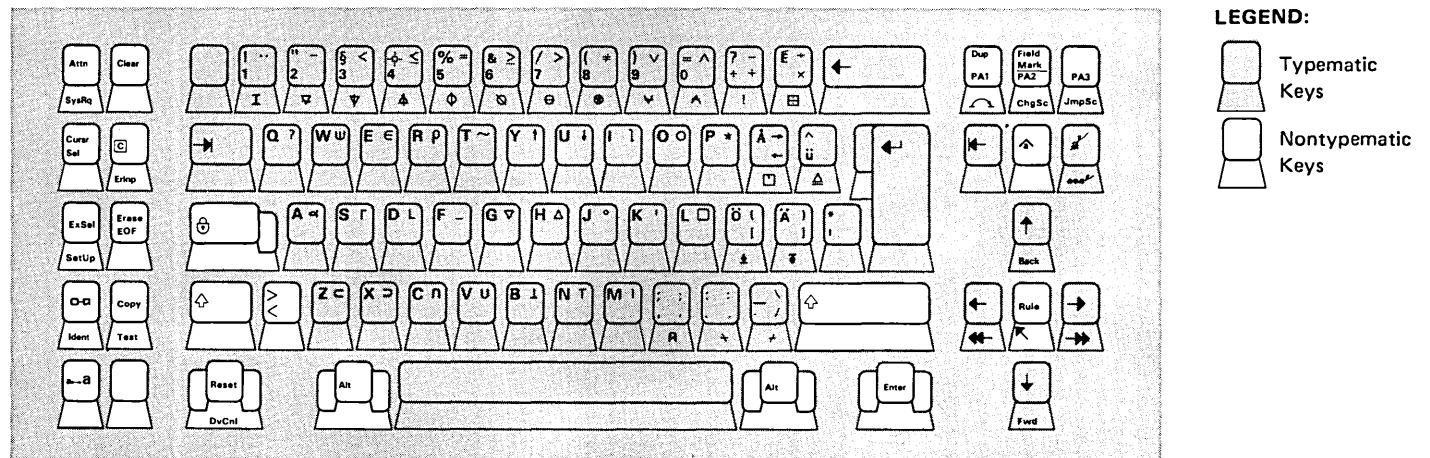


Figure 8-22. Spanish-Speaking Keyboards for 3290 Information Panel

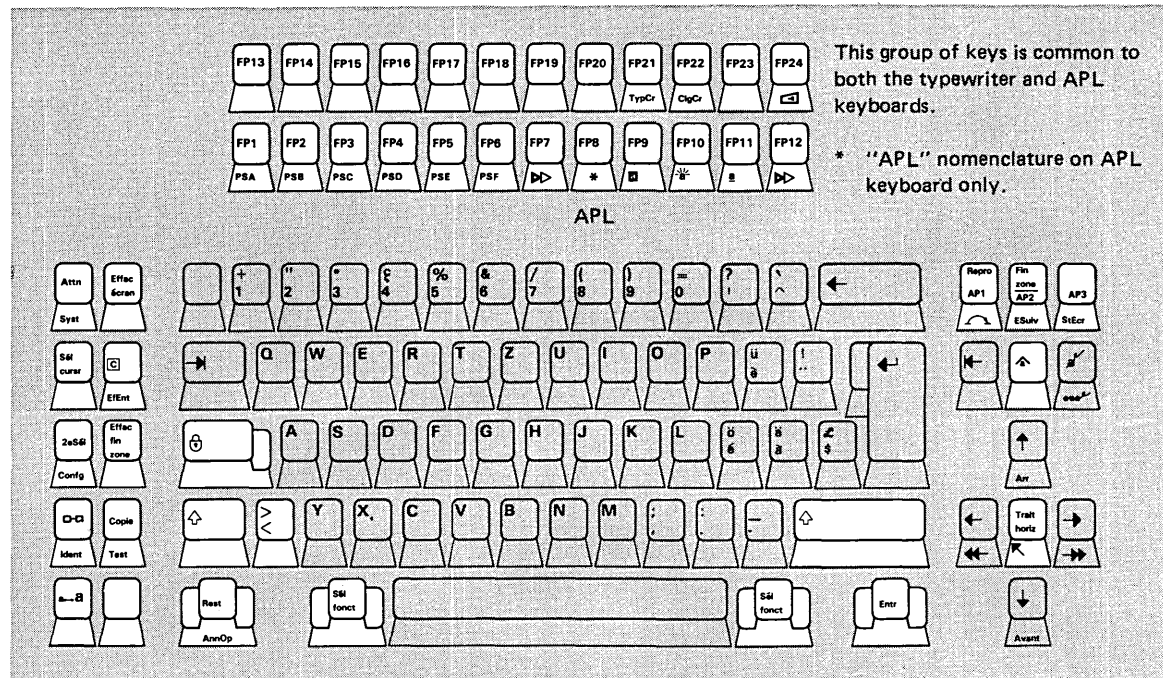


Typewriter Keyboard



APL Keyboard

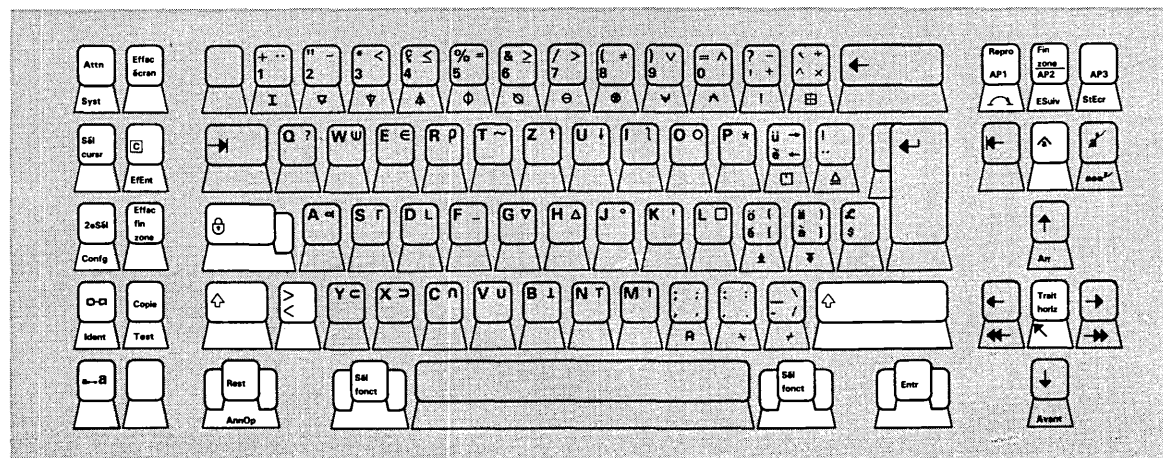
Figure 8-23. Swedish Keyboards for 3290 Information Panel



LEGEND:

Typematic
KeysNontypematic
Keys

Typewriter Keyboard

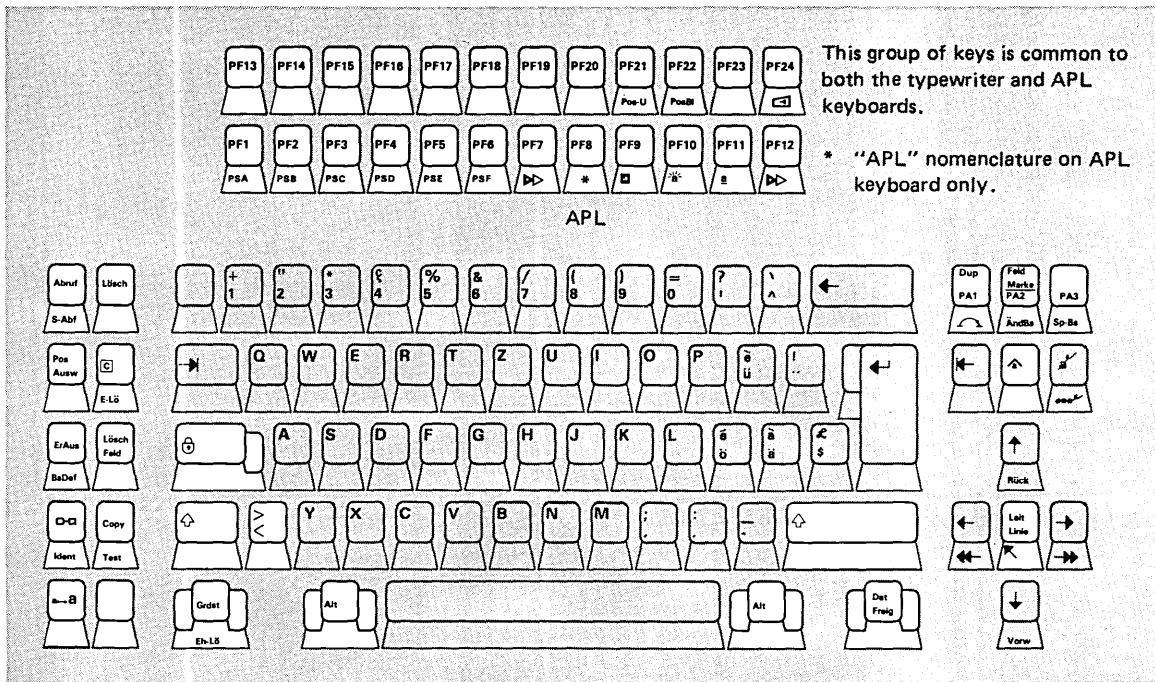


LEGEND:

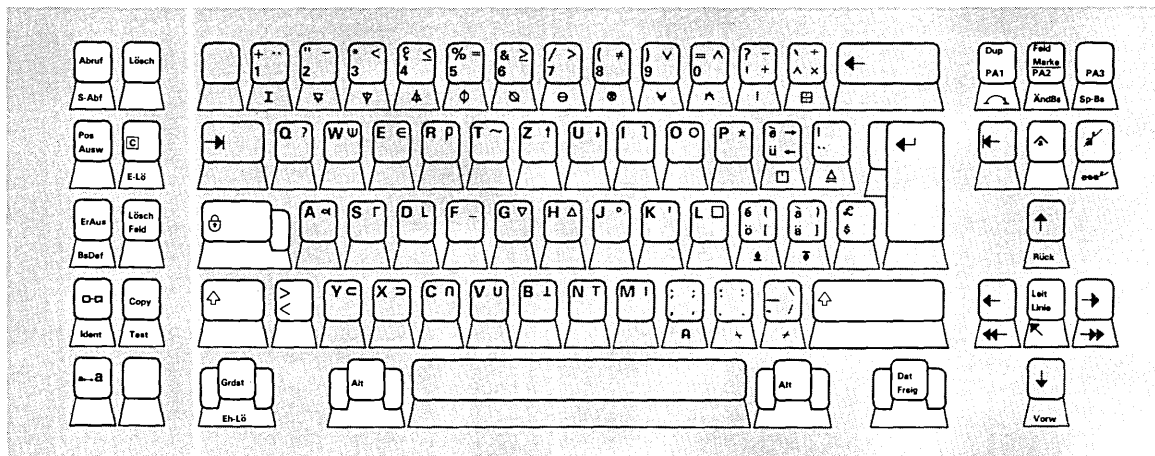
Typematic
KeysNontypematic
Keys

APL Keyboard

Figure 8-24. Swiss-French Keyboards for 3290 Information Panel



Typewriter Keyboard

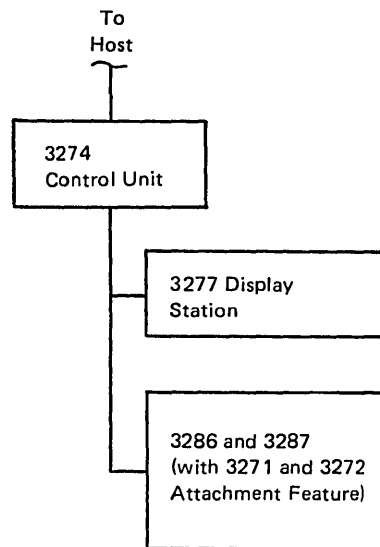


APL Keyboard

Figure 8-25. Swiss-German Keyboards for 3290 Information Panel

Chapter 9. 3277, 3286, and 3287 I/O Interface Codes

This chapter contains all the I/O interface codes (Figures 9-1 through 9-21) that are required to support the 3270 display stations and printers in the configurations identified below, both in the United States and in World Trade countries. Included are interface codes that support special features (dual case, APL, and Text Print) that are optional for customer use. The control characters that are supported by the interface code shown here in its national-language variations are defined in Figure 9-1.



Bits 4567		Hex 1 ↓	00				Bits 0, 1
			00	01	10	11	2, 3
			0	1	2	3		Hex 0
0000	0	NUL					
0001	1		SBA				
0010	2		EUA				
0011	3		IC				
0100	4						
0101	5	PT	NL				
0110	6						
0111	7						
1000	8						
1001	9		EM				
1010	A						
1011	B						
1100	C	FF	DUP		RA		
1101	D		SF				
1110	E		FM				
1111	F				SUB		

Notes:

- Control character assignments for ASCII are shown in Figure 9-9.
- For all languages and features unless otherwise indicated:
 - NL (hex 15 EBCDIC, 0A ASCII) displays or prints as a 5.
 - EM (hex 19) displays or prints as a 9.
 - DUP (hex 1C) displays or prints as an * (asterisk).
 - FM (hex 1E) displays or prints as a ; (semicolon).
 - FF (hex 0C) displays or prints as a < (*less than* sign).

Exceptions:

 - When the printer line-length is not specified, NL or EM is not printed but is executed.
 - When FF is in a valid buffer position, FF is printed as a space and is executed (3287 only).
 - Japanese Katakana:
 - NL displays or prints as two characters: space and 5.
 - EM displays or prints as two characters: space and 9.

NL and EM are stored in the buffer in two buffer locations. The control unit's Katakana hardware expands the NL and EM characters received to the required 2-byte sequence and also contracts the 2-byte buffer sequence to the EBCDIC NL or EM code for a subsequent read operation. If a display operator alters either byte of the 2-byte sequence by using the keyboard, the control unit will no longer contract the 2 bytes into one during read operations.
 - Data Analysis/APL Feature:
 - NL and EM display or print as a 5 and 9, respectively, except on the 3287, which prints a space.
- The FF control character (hex 0C) is returned to the host during a subsequent read operation as graphic code point hex 8C.

Exception:

English (U.S.) ASCII:

FF is returned to the host during a subsequent read operation as graphic code point hex 46, except for 3274 attached terminals, in which case it is returned as hex 0C.

Figure 9-1. Control Character Assignments (EBCDIC)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
Hex 1	Bits 4567																	
0000	0					SP	&	-									0	
0001	1							/		a	j			A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					ö	,ü	!	:									
1011	B					.	Ü	,	Ä									
1100	C					<	*	%	Ö									
1101	D					()	_	'									
1110	E					+	;	>	=									
1111	F					|	⌂	?	ä									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, the resultant terminal operation or graphic character depends upon the terminal used. IBM reserves the right to change, at any time, all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters, unless a dual-case feature is installed on the terminal.
3. Attribute, write control character (WCC), copy control character (CCC), control unit (CU) and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. The broken vertical line (|) character (hex 6A) is not displayed, but is printed by the 3287 printer.
5. Control codes are assigned code points in shaded areas. See Figure 9-1.

Figure 9-2. Austrian/German I/O Interface Code (3277, 3286, and 3287)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-									0	
0001	1							/		a	j			A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					¢	!	|	:									
1011	B					.	\$,	#									
1100	C					<	*	%	@									
1101	D					()	_	'									
1110	E					+	;	>	=									
1111	F					|	└	?	"									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, the resultant terminal operation or graphic character depends upon the terminal used. IBM reserves the right to change, at any time, all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters, unless a dual-case feature is installed on the terminal.
3. Attribute, write control character (WCC), copy control character (CCC), control unit (CU) and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. The broken vertical line (|) character (hex 6A) is not displayed, but is printed by the 3287 printer.
5. Control codes are assigned code points in shaded areas. See Figure 9-1.
6. The 3287 prints all characters within the outlined areas of this figure, with the following substitutions:

Hex Code	Prints As
4A	ç
5A	é
7B	é
7C	à
7F	u

Figure 9-3. Belgian I/O Interface Code (3277, 3286, and 3287)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
Hex 1	Hex 0	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-									0	
0001	1							/		a	j			A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					ã	ç	í	:									
1011	B					.	ç	,	õ									
1100	C					<	*	%	ã									
1101	D					()	-	'									
1110	E					+	;	>	=									
1111	F					|	¬	?	~									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, the resultant terminal operation or graphic character depends upon the terminal used. IBM reserves the right to change, at any time, all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters, unless a dual-case feature is installed on the terminal.
3. Attribute, write control character (WCC), copy control character (CCC), control unit (CU) and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. The broken vertical line (|) character (hex 6A) is not displayed, but is printed by the 3287 printer.
5. Control codes are assigned code points in shaded areas. See Figure 9-1.

Figure 9-4. Brazilian/Portuguese I/O Interface Code (3277, 3286, and 3287)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-									0	
0001	1							/		a	j			A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					¢	!	!	:									
1011	B					.	\$,	#									
1100	C					<	*	%	@									
1101	D					()	-	'									
1110	E					+	;	>	=									
1111	F					|	—	?	"									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, the resultant terminal operation or graphic character depends upon the terminal used. IBM reserves the right to change, at any time, all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters, unless a dual-case feature is installed on the terminal.
3. Attribute, write control character (WCC), copy control character (CCC), control unit (CU) and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. The broken vertical line (|) character (hex 6A) is not displayed, but is printed by the 3287 printer.
5. Control codes are assigned code points in shaded areas. See Figure 9-1.

Figure 9-5. Canadian-French I/O Interface Code (3277, 3286, and 3287)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	—									0	
0001	1							/		a	j			A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					ø	å	|	:									
1011	B					.	Å	,	Æ									
1100	C					<	*	%	ø									
1101	D					()	—	'									
1110	E					+	;	>	=									
1111	F					|	—	?	æ									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, the resultant terminal operation or graphic character depends upon the terminal used. IBM reserves the right to change, at any time, all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters, unless a dual-case feature is installed on the terminal.
3. Attribute, write control character (WCC), copy control character (CCC), control unit (CU) and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. The broken vertical line (|) character (hex 6A) is not displayed, but is printed by the 3287 printer.
5. Control codes are assigned code points in shaded areas. See Figure 9-1.

Figure 9-6. Danish/Norwegian I/O Interface Code (3277, 3286, and 3287)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-									0	
0001	1							/		a	j			A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					\$	!	|	:								
1011	B					.	£	,	#									
1100	C					<	*	%	@									
1101	D					()	_	'									
1110	E					+	;	>	=									
1111	F					|	⌋	?	"									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, the resultant terminal operation or graphic character depends upon the terminal used. IBM reserves the right to change, at any time, all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters, unless a dual-case feature is installed on the terminal.
3. Attribute, write control character (WCC), copy control character (CCC), control unit (CU) and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. The broken vertical line (|) character (hex 6A) is not displayed, but is printed by the 3287 printer.
5. Control codes are assigned code points in shaded areas. See Figure 9-1.

Figure 9-7. English (U.K.) I/O Interface Code (3277, 3286, and 3287)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-									0	
0001	1							/		a	j			A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					\$	!	|	:								
1011	B					.	\$,	#									
1100	C					<	*	%	@									
1101	D					()	_	'									
1110	E					+	;	>	=									
1111	F					|	┐	?	"									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, the resultant terminal operation or graphic character depends upon the terminal used. IBM reserves the right to change, at any time, all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters, unless a dual-case feature is installed on the terminal.
3. Attribute, write control character (WCC), copy control character (CCC), control unit (CU) and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. The broken vertical line (|) character (hex 6A) is not displayed, but is printed by the 3287 printer.
5. Control codes are assigned code points in shaded areas. See Figure 9-1.

Figure 9-8. English (U.S.) I/O Interface Code (3277, 3286, and 3287)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
Bits 4567	Hex 1	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-										0
0001	1							/		a	j			A	J			1
0010	2									b	k	s		B	K	S		2
0011	3									c	l	t		C	L	T		3
0100	4									d	m	u		D	M	U		4
0101	5									e	n	v		E	N	V		5
0110	6									f	o	w		F	O	W		6
0111	7									g	p	x		G	P	X		7
1000	8									h	q	y		H	Q	Y		8
1001	9									i	r	z		I	R	Z		9
1010	A					ö	ä	|	:									
1011	B					.	Ä	,	Ä									
1100	C					<	*	%	Ö									
1101	D					()	_	'									
1110	E					+	;	>	=									
1111	F					|	┐	?	ä									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, the resultant terminal operation or graphic character depends upon the terminal used. IBM reserves the right to change, at any time, all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters, unless a dual-case feature is installed on the terminal.
3. Attribute, write control character (WCC), copy control character (CCC), control unit (CU) and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. The broken vertical line (|) character (hex 6A) is not displayed, but is printed by the 3287 printer.
5. Control codes are assigned code points in shaded areas. See Figure 9-1.

Figure 9-10. Finnish/Swedish I/O Interface Code (3277, 3286, and 3287)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	← 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	← Hex 0
0000	0					SP	&	-									0	
0001	1							/		a	j			A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					¢	!	!	:									
1011	B					.	\$,	#									
1100	C					<	*	%	@									
1101	D					()	_	'									
1110	E					+	;	>	=									
1111	F					|	⌞	?	"									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, the resultant terminal operation or graphic character depends upon the terminal used. IBM reserves the right to change, at any time, all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters, unless a dual-case feature is installed on the terminal.
3. Attribute, write control character (WCC), copy control character (CCC), control unit (CU) and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. The broken vertical line (|) character (hex 6A) is not displayed, but is printed by the 3287 printer.
5. The 3287 prints all characters within the outlined areas of this figure, with the following substitutions:

Hex Code	Prints As
4A	ç
5A	è
7B	é
7C	à
7F	ù

6. Control codes are assigned code points in shaded areas. See Figure 9-1.

Figure 9-11. French I/O Interface Code (3277, 3286, and 3287)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
Bits 4567	Hex 1																	
0000	0					SP	&	-										0
0001	1							/		a	j			A	J			1
0010	2									b	k	s		B	K	S		2
0011	3									c	l	t		C	L	T		3
0100	4									d	m	u		D	M	U		4
0101	5									e	n	v		E	N	V		5
0110	6									f	o	w		F	O	W		6
0111	7									g	p	x		G	P	X		7
1000	8									h	q	y		H	Q	Y		8
1001	9									i	r	z		I	R	Z		9
1010	A					¢	!	|	:									
1011	B					.	\$,	#									
1100	C					<	*	%	@									
1101	D					()	_	'									
1110	E					+	;	>	=									
1111	F					|	⌋	?	"									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, the resultant terminal operation or graphic character depends upon the terminal used. IBM reserves the right to change, at any time, all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters, unless a dual-case feature is installed on the terminal.
3. Attribute, write control character (WCC), copy control character (CCC), control unit (CU) and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. The broken vertical line (⌋) character (hex 6A) is not displayed, but is printed by the 3287 printer.
5. The 3287 prints all characters within the outlined areas of this figure, with the following substitutions:

Hex Code	Prints As
4A	ç
5A	è
7B	é
7C	ò
7F	ù

6. Control codes are assigned code points in shaded areas. See Figure 9-1.

Figure 9-12. Italian I/O Interface Code (3277, 3286, and 3287)

Second Hex Char.		First Hex Char. Bits																			
		00				01				10				11							
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11				
Hex 1		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0			
Bits 4567	Hex																				
0000	0					SP	&	—			ソ					\$	0				
0001	1					。	エ	/		ア	タ			A	J		1				
0010	2					「	オ			イ	チ	ハ		B	K	S	2				
0011	3					」	カ			ウ	ツ	ホ		C	L	T	3				
0100	4					、	ユ			エ	テ	マ		D	M	U	4				
0101	5					・	ヨ			オ	ト	ミ		E	N	V	5				
0110	6					ヲ	ツ			カ	ナ	ム		F	O	W	6				
0111	7					ア				キ	ニ	メ		G	P	X	7				
1000	8					イ	—			ク	ヌ	モ		H	Q	Y	8				
1001	9					ウ				ケ	ネ	ブ		I	R	Z	9				
1010	A								:	コ	ノ	ユ	レ								
1011	B					・	¥	,	#				□								
1100	C					<	*	%	@	サ		ヨ	ワ								
1101	D					(	)	_	'	シ	ハ	ラ	ン								
1110	E					+	;	>	=	ス	ヒ	リ	ハ								
1111	F					|	—	?		セ	フ	ル	。								

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, the resultant terminal operation or graphic character depends upon the terminal used. IBM reserves the right to change, at any time, all undefined codes.
2. Attribute, write control character (WCC), copy control character (CCC), control unit (CU) and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
3. Hex codes 4A, 5A, 6A, and 7F are used for CU addressing, device addressing, buffer addressing, and control purposes (for example, WCC and CCC), but have no associated graphic characters.
4. Control codes are assigned code points in shaded areas. See Figure 9-1.

Figure 9-13. Japanese Katakana I/O Interface Code (3277, 3286, and 3287)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
Bits 4,5,6,7	Hex 1	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-									0	
0001	1							/		a	j			A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					ã	ç	í	:									
1011	B					.	ç	,	õ									
1100	C					<	*	%										
1101	D					()	-	'									
1110	E					+	;	>	=									
1111	F					|		?										

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, the resultant terminal operation or graphic character depends upon the terminal used. IBM reserves the right to change, at any time, all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters, unless a dual-case feature is installed on the terminal.
3. Attribute, write control character (WCC), copy control character (CCC), control unit (CU) and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. The broken vertical line (|) character (hex 6A) is not displayed, but is printed by the 3287 printer.
5. Control codes are assigned code points in shaded areas. See Figure 9-1.

Figure 9-14. Portuguese I/O Interface Code (3277, 3286, and 3287)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-									0	
0001	1							/		a	j			A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					¢	!	|	:									
1011	B					.	Pt	,	Ñ									
1100	C					<	*	%	@									
1101	D					()	_	'									
1110	E					+	;	>	=									
1111	F					|	┘	?	ñ									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, the resultant terminal operation or graphic character depends upon the terminal used. IBM reserves the right to change, at any time, all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters, unless a dual-case feature is installed on the terminal.
3. Attribute, write control character (WCC), copy control character (CCC), control unit (CU) and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. The broken vertical line (|) character (hex 6A) is not displayed, but is printed by the 3287 printer.
5. Control codes are assigned code points in shaded areas. See Figure 9-1.

Figure 9-15. Spanish I/O Interface Code (3277, 3286, and 3287)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	—									0	
0001	1							/		a	j			A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					¢	!	¡	:									
1011	B					.	Pt	,	~									
1100	C					<	*	%	@									
1101	D					()	—	'									
1110	E					+	;	>	=									
1111	F					|	┘	?	~									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, the resultant terminal operation or graphic character depends upon the terminal used. IBM reserves the right to change, at any time, all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters, unless a dual-case feature is installed on the terminal.
3. Attribute, write control character (WCC), copy control character (CCC), control unit (CU) and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. The broken vertical line (|) character (hex 6A) is not displayed, but is printed by the 3287 printer.
5. Control codes are assigned code points in shaded areas. See Figure 9-1.

Figure 9-16. Spanish-Speaking I/O Interface Code (3277, 3286, and 3287)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
Hex 1 ↓ Bits 4567		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0 ←
0000	0																0	
0001	1																1	
0010	2																2	
0011	3																3	
0100	4																4	
0101	5																5	
0110	6																6	
0111	7																7	
1000	8																8	
1001	9																9	
1010	A								*	Special (Note 1)								
1011	B								SOR									
1100	C								EOI									
1101	D								*	Field Separator								
1110	E								*	Unassigned								
1111	F								EOR									

Notes:

1. Special. This character is reserved for operator identification and must be located in the first data position.
2. SOR (Start of Record). This character is a *graphic* # (not displayed), indicating the beginning of a record on the card.
3. EOI (End of Inquiry). This character is a *graphic* @ (not displayed) that can be used as a termination character on the card.
4. EOR (End of Record). This character is a *graphic* " (not displayed) that can also be used as a termination character.

Figure 9-17. 3277 10-Numeric Character Set (Operator Identification Card Reader)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	2,3
Bits 4567	Hex 1	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-			□	-	α				0	
0001	1							/		a	j	ε	€	A	J		1	
0010	2									b	k	s	ı	B	K	S	2	
0011	3									c	l	t	ρ	C	L	T	3	
0100	4									d	m	u	ω	D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w	x	F	O	W	6	
0111	7									g	p	x	\	G	P	X	7	
1000	8									h	q	y	÷	H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					¢	!		:	†	⌋	∩	∇					
1011	B					.	\$	,	#		c	u	Δ					
1100	C					<	*	%	@	≤		⊥	T					
1101	D					(	)	_	'	Γ	o	[]					
1110	E					+	;	>	=	L		≥	≠					
1111	F					|	⌌	?	"	→	←	°	|					

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, the resultant terminal operation or graphic character depends upon the terminal used. IBM reserves the right to change, at any time, all undefined codes.
2. All character codes shown may be entered from the APL keyboard.
3. Control codes are assigned code points in shaded areas. See Figure 9-1.

Figure 9-18. Data Analysis APL Feature, 1-Byte I/O Interface Code (3277 Model 2, 3286 Model 2, and 3287 Model 1 or 2)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0										{	}	⊙					
0001	1									<u>A</u>	<u>J</u>	°	1					
0010	2									<u>B</u>	<u>K</u>	<u>S</u>	2	↓	I	⊖		
0011	3									<u>C</u>	<u>L</u>	<u>T</u>	3	..	!	⊞	△	
0100	4									<u>D</u>	<u>M</u>	<u>U</u>	4					
0101	5		5							<u>E</u>	<u>N</u>	<u>V</u>						
0110	6									<u>F</u>	<u>O</u>	<u>W</u>	6	~∇	ψ	Φ		
0111	7									<u>G</u>	<u>P</u>	<u>X</u>	7	⊕	⚡	Φ		
1000	8									<u>H</u>	<u>Q</u>	<u>Y</u>	8					
1001	9		9							<u>I</u>	<u>R</u>	<u>Z</u>						
1010	A					~	⊞	^		1	2	3	n					
1011	B					~	⊞	v	~		⊞	L	J					
1100	C									-		Γ	⌈					
1101	D									(	)	⌈	T					
1110	E		±			Φ	/			+		⌈	⊥					
1111	F					Φ	λ			+	■	●	—					

Notes:

1. These codes, each preceded by a start field control character (hex 1D), transmit the graphics shown.
2. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, the resultant terminal operation or graphic character depends upon the terminal used. IBM reserves the right to change, at any time, all undefined codes.
3. Only those graphic characters shown within the bold outline may be entered from the APL keyboard.

Legend:

	Superscript
	Subscript

Figure 9-19. Data Analysis APL Feature, 2-Byte I/O Interface Code (3277 Model 2, 3286 Model 2, and 3287 Model 1 or 2)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
Hex 1 ↓ Bits 4567		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-			□	-					0	
0001	1							/		a	j			A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x	\	G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					¢	!		:	†			▽					
1011	B					.	\$	,	#				Δ					
1100	C					<	*	%	@	≤								
1101	D					()	-	'	┌		[]					
1110	E					+	;	>	=	└		≥	≠					
1111	F					|	┐	?	"	→	←		|					

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, the resultant terminal operation or graphic character depends upon the terminal used. IBM reserves the right to change, at any time, all undefined codes.
2. All character codes shown can be entered directly from the Text keyboard.

Figure 9-20. Text Feature, 1-Byte I/O Interface Code (3277 Model 2, 3286 Model 2, and 3287 Model 1 or 2)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
Bits 4,5,6,7	Hex 1																	
0000	0										{	}	⊙					
0001	1											°	1					
0010	2												2	↓				
0011	3												3			⊞	⊞	
0100	4												4					
0101	5		5															
0110	6												6	⌘	⌘	⌘	⌘	
0111	7												7	⊕	⊕	⊕	⊕	
1000	8												8					
1001	9		9															
1010	A						^		1	2	3	n						
1011	B						v			⌘	⌘	⌘						
1100	C								-		⌘	⌘						
1101	D								()	⌘	⌘						
1110	E		±			/			+		⌘	⌘						
1111	F					λ			+	■	●	—						

Notes:

1. These codes, each preceded by a hex ID control character, transmit the graphics shown.
2. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, the resultant terminal operation or graphic character depends upon the terminal used. IBM reserves the right to change, at any time, all undefined codes.
3. All codes shown can be entered directly from the Text keyboard.

Legend:

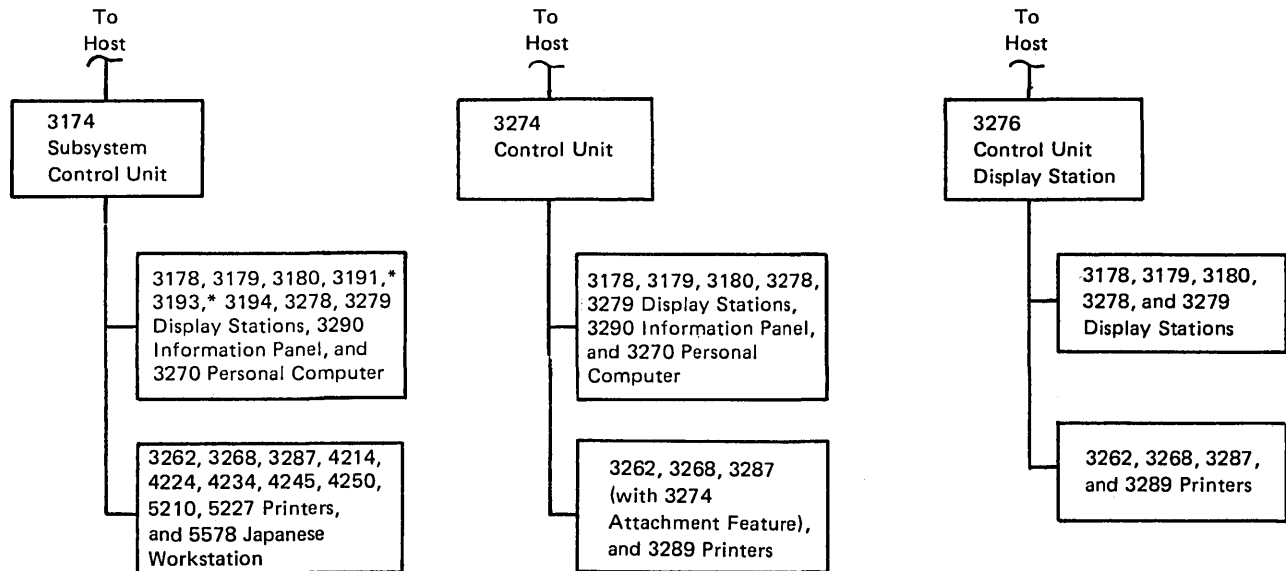


Figure 9-21. Text Feature, 2-Byte I/O Interface Code (3277 Model 2, 3286 Model 2, and 3287 Model 1 or 2)

Chapter 10. 3270 Display Station and Printer I/O Interface Codes

This chapter contains the I/O interface codes (Figures 10-1 through 10-45) that support the various 3270 keyboards and printers associated with the 3174 Subsystem Control Unit, with the 3274 Control Unit, and with the 3276 Control Unit Display Station, both in the United States and in World Trade countries. Included is a figure (Figure 10-43) that illustrates the differences in I/O interface codes for the various national languages that are supported by the 3270 Information Display System. I/O interface codes for the IBM Magnetic Slot Reader are also provided (Figures 10-44 and 10-45).

Figures 10-46 and 10-47 indicate actions taken by the 3274 and 3174 control units in response to various interface code points.



*Keyboard layouts and I/O interface code charts for these units are presented in their respective manuals: *IBM 3191 Display Station User's Guide*, GA18-2454, and *IBM 3193 Display Station Description*, GA18-2364.

		00				11				Bits 0, 1
		00	01	10	11	00	01	10	11	Bits 2, 3
		0	1	2	3	C	D	E	F	Hex 0
0000	0	NUL								
0001	1		SBA							
0010	2		EUA							
0011	3		IC							
0100	4									
0101	5	PT	NL							
0110	6									
0111	7									
1000	8	GE		SA						
1001	9		EM	SFE						
1010	A									
1011	B									
1100	C	FF	DUP	MF	RA					
1101	D	CR	SF							
1110	E		FM							
1111	F				SUB				EO	

Notes:

1. FF, CR, NL, and EM control characters are displayed or printed as space characters.
2. The DUP and FM control characters are respectively displayed as * and ; in dual-case mode and as * and ; in mono-case mode; they are printed, in both modes, as * and ; respectively.
3. For 3274 control units with Configuration Support C installed, undefined control codes from hex 00 to hex 3F, and hex FF, cause a negative response [systems network architecture (SNA)] or an Op Chk [binary synchronous communication (BSC)].
4. The "alternate" I/O interface codes defined for certain languages do not support the GE, SFE, MF, SA, EO, or CR control codes.
5. ASCII control character assignments are given in Figure 10-13.
6. The 3289, when operating in SCS mode, prints hyphens for both hex 1C and hex 1E.

Figure 10-1. Control Character Assignments (EBCDIC)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
Bits 4567	Hex 1	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-						ä	ü	Ö	0	
0001	1							/		a	j	β		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					Ä	Ü	öi	:									
1011	B					.	\$,	#									
1100	C					<	*	%	§									
1101	D					()	-	'									
1110	E					+	;	>	=									
1111	F					!	^	?	"									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation. IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lower-case characters are displayed or printed as uppercase characters when operating in mono-case mode.
3. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. Control codes are assigned code points in shaded areas. See Figure 10-1.

Figure 10-2. Austrian/German I/O Interface Code

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
Bits 4567	Hex 1	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-										0
0001	1							/		a	j			A	J			1
0010	2									b	k	s		B	K	S		2
0011	3									c	l	t		C	L	T		3
0100	4									d	m	u		D	M	U		4
0101	5									e	n	v		E	N	V		5
0110	6									f	o	w		F	O	W		6
0111	7									g	p	x		G	P	X		7
1000	8									h	q	y		H	Q	Y		8
1001	9									i	r	z		I	R	Z		9
1010	A					ö	ü	ß	:									
1011	B					.	Ü	,	Ä									
1100	C					<	*	%	Ö									
1101	D					()	_	'									
1110	E					+	;	>	=									
1111	F					|	└	?	ä									

*This code table is not supported by the 3174 Subsystem Control Unit.

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation. IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters when operating in mono-case mode.
3. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. Control codes are assigned code points in shaded areas. See Figure 10-1.

Figure 10-3. Austrian/German (Alternate) I/O Interface Code

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-						é	è	ç	0	
0001	1							/		a	j	..		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9								,	i	r	z		I	R	Z	9	
1010	A					£	□	ù	:									
1011	B					.	\$,	#									
1100	C					<	*	%	`									
1101	D					()	-	'									
1110	E					+	;	>	=									
1111	F					!	^	?	"									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: *for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation.* IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters when operating in mono-case mode.
3. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. Control codes are assigned code points in shaded areas. See Figure 10-1.

Figure 10-4. Belgian I/O Interface Code

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-						õ	é	\	0	
0001	1							/		a	j	~		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9								ã	i	r	z		I	R	Z	9	
1010	A					É	\$	ç	:									
1011	B					.	Ç	,	Õ									
1100	C					<	*	%	Ɔ									
1101	D					()	-	'									
1110	E					+	;	>	=									
1111	F					!	^	?	"									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation. IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters when operating in mono-case mode.
3. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. Control codes are assigned code points in shaded areas. See Figure 10-1.

Figure 10-5. Brazilian I/O Interface Code

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-					^	{	}	\	0	
0001	1						é	/	É	a	j	~		A	J		1	
0010	2					^a	^e	^A	^E	b	k	s		B	K	S	2	
0011	3						ë		Ë	c	l	t		C	L	T	3	
0100	4					^a	^e	^A	^E	d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6						^i		^I	f	o	w		F	O	W	6	
0111	7						ï		Ï	g	p	x		G	P	X	7	
1000	8					§		§		h	q	y		H	Q	Y	8	
1001	9								^	i	r	z		I	R	Z	9	
1010	A					¢	!	!	:									
1011	B					.	\$	,	#					^o	^u	^O	^U	
1100	C					<	*	%	@						ü		Ü	
1101	D					(	)	-	'		^		^		^u		^U	
1110	E					+	;	>	=				^					
1111	F					|	^	?	"									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: *for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation.* IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters when operating in mono-case mode.
3. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. Control codes are assigned code points in shaded areas. See Figure 10-1.

Figure 10-6. Canadian Bilingual I/O Interface Code

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-						é	è	ç	0	
0001	1							/	É	a	j	..		A	J		1	
0010	2					â	ê	Â	Ê	b	k	s		B	K	S	2	
0011	3						ë		Ë	c	l	t		C	L	T	3	
0100	4							À	È	d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6						î		Î	f	o	w		F	O	W	6	
0111	7						ï		Ï	g	p	x		G	P	X	7	
1000	8					ç		Ç		h	q	y		H	Q	Y	8	
1001	9								`	i	r	z		I	R	Z	9	
1010	A					à	'	ù	:									
1011	B					.	\$	,	#					ô	û	ö	ù	
1100	C					<	*	%	@						ü		Û	
1101	D					(	)	-	'								Ü	
1110	E					+	;	>	=									
1111	F					!	^	?	"									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: *for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation.* IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters when operating in mono-case mode.
3. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. Control codes are assigned code points in shaded areas. See Figure 10-1.

Figure 10-7. Canadian-French I/O Interface Code

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
Bits 4567	Hex 1																	
0000	0					SP	&	—	Ѓ	ц	й	я	b			\	0	
0001	1						Љ	/	ћ	a	j		bl	A	J	Ѧ	1	
0010	2					ђ	њ	ѓ	ќ	b	k	s	з	B	K	S	2	
0011	3					ѓ	ћ	ѐ		c	l	t	ш	C	L	T	3	
0100	4					ë	ќ			d	m	u	э	D	M	U	4	
0101	5							S	Ц	e	n	v	щ	E	N	V	5	
0110	6					s	ц	l	ю	f	o	w	ч	F	O	W	6	
0111	7					i	џ	ї	a	g	p	x	џ	G	P	X	7	
1000	8					ї	Nº	J	б	h	q	y	ю	H	Q	Y	8	
1001	9					j	ђ	Љ		i	r	z	A	I	R	Z	9	
1010	A					[	]	|	:	д	к	р	Б	X	H	T	3
1011	B					.	\$	,	#	e	л	с	Ц	И	O	У	Ш
1100	C					<	*	%	@	ф	м	т	Д	Й	П	Ж	Э	
1101	D					(	)	_	'	г	н	у	Е	К	Я	В	Щ
1110	E					+	;	>	=	x	о	ж	Ф	Л	Р	Ь	Ч	
1111	F					!	^	?	"	и	п	в	Г	М	С	Ы		

Note: Characters A through Z (C1 through C9, D1 through D9, E2 through E9) are Latin characters. Cyrillic characters that are identical with the Latin characters must be selected outside the Latin character range.

Figure 10-8. Cyrillic I/O Interface Code (Not Supported by 3274 and 3276)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	2,3
Bits 4567	Hex 1	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-						æ	å	\	0	
0001	1							/		a	j	ü		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					#	×	φ	:									
1011	B					.	Å	,	Æ									
1100	C					<	*	%	φ									
1101	D					()	-	'									
1110	E					+	;	>	=									
1111	F					!	^	?	"									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: *for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation.* IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters when operating in mono-case mode.
3. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. Control codes are assigned code points in shaded areas. See Figure 10-1.

Figure 10-9. Danish/Norwegian I/O Interface Code

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-									0	
0001	1							/		a	j			A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					ø	å	!	:									
1011	B					.	Å	,	Æ									
1100	C					<	*	%	ø									
1101	D					()	_	'									
1110	E					+	;	>	=									
1111	F					|	⌞	?	æ									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation. IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters when operating in mono-case mode.
3. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. Control codes are assigned code points in shaded areas. See Figure 10-1.

Figure 10-10. Danish/Norwegian (Alternate) I/O Interface Code (Not Supported by 3174)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-						{	}	\	0	
0001	1							/		a	j	-		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					\$	!	|	:								
1011	B					.	£	,	#									
1100	C					<	*	%	@									
1101	D					()	_	'									
1110	E					+	;	>	=									
1111	F					|	¬	?	"									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: *for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation.* IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters when operating in mono-case mode.
3. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. Control codes are assigned code points in shaded areas. See Figure 10-1.

Figure 10-11. English (U.K.) I/O Interface Code

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	2,3
Bits 4567	Hex 1	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-						{	}	\	0	
0001	1							/		a	j	~		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					¢	!	|	:									
1011	B					.	\$,	#									
1100	C					<	*	%	@									
1101	D					()	_	'									
1110	E					+	;	>	=									
1111	F					|	¬	?	"									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: *for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation.* IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters when operating in mono-case mode.
3. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. Control codes are assigned code points in shaded areas. See Figure 10-1.

Figure 10-12. English (U.S.) I/O Interface Code

		00				01				Bits 0,1
		00	01	10	11	00	01	10	11	2,3
Hex 1 ↓ Bits 4567		0	1	2	3	4	5	6	7	Hex 0
0000	0	NUL		SP	0	@	P	-	p	
0001	1		SBA	!	1	A	Q	a	q	
0010	2		EUA	"	2	B	R	b	r	
0011	3		IC	#	3	C	S	c	s	
0100	4		RA	\$	4	D	T	d	t	
0101	5			%	5	E	U	e	u	
0110	6			&	6	F	V	f	v	
0111	7			'	7	G	W	g	w	
1000	8			(	8	H	X	h	x	
1001	9	PT	EM	)	9	I	Y	i	y	
1010	A	NL		*	:	J	Z	j	z	
1011	B			+	;	K	[	k	{	
1100	C	FF	DUP	,	<	L	\	l	|	
1101	D	CR	SF	-	=	M	]	m	}	
1110	E		FM	.	>	N	^	n	~	
1111	F			/	?	O	_	o		

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 2D). The control unit will return the hyphen, not the original code, during a subsequent read operation.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters when operating in mono-case mode.
3. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. The 3289, 3230, 3262, and 3268 do not support the ASCII character set. The 3287 supports the ASCII character set.

Figure 10-13. English (U.S.) ASCII-7 I/O Interface Code

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
Bits 4567	Hex 1																	
0000	0			SP	0	@	P	\	p									
0001	1		SBA	!	1	A	Q	a	q									
0010	2		EUA	"	2	B	R	b	r									
0011	3		IC	#	3	C	S	c	s									
0100	4		RA	\$	4	D	T	d	t									
0101	5			%	5	E	U	e	u	NL								
0110	6			&	6	F	V	f	v									
0111	7			'	7	G	W	g	w		GE							
1000	8			(	8	H	X	h	x	SA								
1001	9	PT	EM	)	9	I	Y	i	y	SFE								
1010	A		SUB	*	:	J	Z	j	z									
1011	B			+	;	K	[	,k	{									
1100	C	FF	DUP	,	<	L	\	l	!	MF								
1101	D	CR	SF	-	=	M	]	m	}									
1110	E		FM	.	>	N	^	n	~									
1111	F			/	?	O	—	o	!								EO	

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 2D). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: *for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation.* IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters when operating in mono-case mode.
3. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. The 3289, 3230, 3262, and 3268 do not support the ASCII character set. The 3287 supports the ASCII character set.

Figure 10-14. English (U.S.) ASCII-8 I/O Interface Code

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-						{	}	\	0	
0001	1							/		a	j	~		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									\	i	r	z	I	R	Z	9	
1010	A					[	]	|	:								
1011	B					.	\$,	#									
1100	C					<	*	%	@									
1101	D					()	_	'									
1110	E					+	;	>	=									
1111	F					!	^	?	"									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: *for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation.* IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters when operating in mono-case mode.
3. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. Control codes are assigned code points in shaded areas. See Figure 10-1.

Figure 10-15. English (U.S.) ASCII/International I/O Interface Code

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-						ä	å	É	0	
0001	1							/		a	j	ü		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9								é	i	r	z		I	R	Z	9	
1010	A					§		ö	:									
1011	B					.	Ä	,	Ä									
1100	C					<	*	%	Ö									
1101	D					()	-	'									
1110	E					+	;	>	=									
1111	F					!	^	?	"									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation. IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters when operating in mono-case mode.
3. Attribute, WCC, CCC CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. Control codes are assigned code points in shaded areas. See Figure 10-1.

Figure 10-16. Finnish/Swedish I/O Interface Code

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-									0	
0001	1							/		a	j			A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					ö	ä	!	:									
1011	B					.	Ä	,	Ä									
1100	C					<	*	%	Ö									
1101	D					()	-	'									
1110	E					+	;	>	=									
1111	F					|	┐	?	ä									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation. IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters when operating in mono-case mode.
3. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. Control codes are assigned code points in shaded areas. See Figure 10-1.

Figure 10-17. Finnish/Swedish (Alternate) I/O Interface Code (Not Supported by 3174)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-						é	è	ç	0	
0001	1							/		a	j	..		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					°	\$	ù	:									
1011	B					.	\$,	£									
1100	C					<	*	%	ä									
1101	D					()	_	'									
1110	E					+	;	>	=									
1111	F					!	^	?	"									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: *for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation.* IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters when operating in mono-case mode.
3. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. Control codes are assigned code points in shaded areas. See Figure 10-1.

Figure 10-18. French I/O Interface Code

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
Hex 1	Bits 4567					SP	&	-						é	è	ç	0	
0000	0																	
0001	1							/		a	j	..		A	J		1	
0010	2					^ a	^ e			b	k	s		B	K	S	2	
0011	3					ä	ë			c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6						^ i			f	o	w		F	O	W	6	
0111	7						ï			g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9								V	i	r	z		I	R	Z	9	
1010	A					°	§		:									
1011	B					.	\$	,	£					^ o	^ u			
1100	C					<	*	%						ö	ü			
1101	D					()	_	'									
1110	E					+	;	>	=									
1111	F					!	^	?	”						ÿ			

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: *for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation.* IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters when operating in mono-case mode.
3. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. Code point 79(V) is not displayable on 3178, 3278, and 3279 screens. Instead, an X-S symbol is displayed in the operator information area indicating that the symbol keyed is not available.

Figure 10-19. French (AZERTY) 105-Character I/O Interface Code

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	2,3
Bits 4567	Hex 1	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	—		Ä	Ö	Ü		„	‘	°	0	
0001	1					A	K	/	‘A	a	j	..	á	A	J		1	
0010	2					B	Λ	T	‘E	b	k	s	é	B	K	S	2	
0011	3					Γ	M	Y	‘H	c	l	t	ή	C	L	T	3	
0100	4					Δ	N	Φ		d	m	u	ï	D	M	U	4	
0101	5					E	Ξ	X	‘I	e	n	v	í	E	N	V	5	
0110	6					Z	O	Ψ	‘O	f	o	w	ó	F	O	W	6	
0111	7					H	Π	Ω	‘Y	g	p	x	ύ	G	P	X	7	
1000	8					Θ	P		‘Ω	h	q	y	ü	H	Q	Y	8	
1001	9					I	Σ		˘	i	r	z	ώ	I	R	Z	9	
1010	A					[	]		:	α	η	ν	ς		±	½	ÿ	
1011	B					.	\$	,	£	β	θ	ξ	τ	ω	é	ö	ς	
1100	C					<	*	%	§	γ	ι	ο	υ	â	è	ô	Ç	
1101	D					(	)	—	‘	δ	κ	π	φ	à	ë	û		
1110	E					+	;	>	=	ε	λ	ρ	χ	ä	î	ù		
1111	F					!	^	?	"	ζ	μ	σ	ψ	ê	ï	ü		

Note: Characters A through Z (C1 through C9, D1 through D9, and E2 through E9) are Latin characters. Greek characters that are identical with the Latin characters must be selected outside the Latin character range.

Figure 10-20. Greek I/O Interface Code (Not Supported by 3274 and 3276)

		00				01				10				11				Bits 0, 1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2, 3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-			°	μ	^	{	}	\	0	
0001	1					ח	ך	/	ן	a	j	~	£	A	J		1	
0010	2					ב	ך	y		b	k	s	ץ	B	K	S	2	
0011	3					ל	כ	ף		c	l	t		C	L	T	3	
0100	4					ד	ל	פ		d	m	u	f	D	M	U	4	
0101	5					ה	ם	ץ		e	n	v	§	E	N	V	5	
0110	6					ו	ם	צ		f	o	w	¶	F	O	W	6	
0111	7					ז	ן	ק		g	p	x	¼	G	P	X	7	
1000	8					ח	ן	ר	x	h	q	y	½	H	Q	Y	8	
1001	9					ט	ד	ש	.	i	r	z	¾	I	R	Z	9	
1010	A					¢	!	!	:	«	ד	ן	[			ז	א	
1011	B					.	\$	.	#	»	ה	ט	]	ל	ד	צ		
1100	C					<	*	%	@	ח	ן	ך	-	ם	ע	ק		
1101	D					(	)	-	'	ב	>	ך	..	ם	ף	ך		
1110	E					+	;	>	=	ל	ז	כ	,	ן	פ	ש		
1111	F					י	ך	?	"	±	א	®	=	ן	ץ	ן		

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: *for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation.* IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters when operating in mono-case mode.
3. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. Control codes are assigned code points in shaded areas. See Figure 10-1.
5. Hex B3 reserved for Israel currency symbol.

Figure 10-21. Hebrew (National Bulletin) I/O Interface Code

		00				01				10				11				Bits 0, 1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2, 3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-						{	}	\	0	
0001	1					ח	ך	/	ן	a	j	~		A	J		1	
0010	2					ב	ך	ץ		b	k	s		B	K	S	2	
0011	3					ג	כ	ף		c	l	t		C	L	T	3	
0100	4					ד	ל	פ		d	m	u		D	M	U	4	
0101	5					ה	ם	ץ		e	n	v		E	N	V	5	
0110	6					ו	ח	צ		f	o	w		F	O	W	6	
0111	7					ז	ן	ק		g	p	x		G	P	X	7	
1000	8					ח	ב	ך		h	q	y		H	Q	Y	8	
1001	9					ט	ד	ש	,	i	r	z		I	R	Z	9	
1010	A					\$!	!	:									
1011	B'					.	ף	,	#									
1100	C					<	*	%	@									
1101	D					()	-	'									
1110	E					+	;	>	=									
1111	F					|	ן	?	"									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation. IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters when operating in mono-case mode.
3. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. Control codes are assigned code points in shaded areas. See Figure 10-1.

Figure 10-22. Hebrew (New, Post Aleph) I/O Interface Code

		00				01				10				11				Bits 0, 1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2, 3
Hex 1 Bits 4567		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	⌘	-									0	
0001	1							/		ב	ך			A	J		1	
0010	2								&	ל	כ	ף		B	K	S	2	
0011	3									ד	ל	פ		C	L	T	3	
0100	4									ה	ם	ץ		D	M	U	4	
0101	5									ו	מ	צ		E	N	V	5	
0110	6									ז	ן	ק		F	O	W	6	
0111	7									ח	נ	ר		G	P	X	7	
1000	8									ט	ס	ש		H	Q	Y	8	
1001	9									י	ע	מ		I	R	Z	9	
1010	A					\$!		:									
1011	B					.	ף	.	#									
1100	C					<	*	%	@									
1101	D					()	-	'									
1110	E					+	;	>	=									
1111	F					|	⌵	?	"									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation. IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
3. Control codes are assigned code points in shaded areas. See Figure 10-1.

Figure 10-23. Hebrew (Old, Post Aleph) I/O Interface Code

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
Bits 4567	Hex 1																	
0000	0					SP	&	—	ø	ø	°	μ	¢	þ	æ		0	
0001	1						é	/	É	a	j	ö	£	A	J		1	
0010	2					â	ê	Â	Ê	b	k	s		B	K	S	2	
0011	3					ä	ë	Ä	Ë	c	l	t		C	L	T	3	
0100	4					à	è	À	È	d	m	u	©	D	M	U	4	
0101	5					á	í	Á	Í	e	n	v	§	E	N	V	5	
0110	6					ã	î		Î	f	o	w	¶	F	O	W	6	
0111	7					ä	ï	Ä	Ï	g	p	x	¼	G	P	X	7	
1000	8					ç	ì	Ç	Ì	h	q	y	½	H	Q	Y	8	
1001	9					ñ	β	Ñ	ø	i	r	z		I	R	Z	9	
1010	A					þ	Æ	í	:	«	ä	í	¬			2	3	
1011	B					.	\$	,	#	»	ö	¿	|	ô	û	Ô	Û	
1100	C					<	*	%	Ð	'	}	@	-	~	ü	^	Ü	
1101	D					(	)	_	'	ý	¸	Ý	..	ò	ù	Ò		
1110	E					+	;	>	=	{	]	[	\	ó	ú	Ó	Ú	
1111	F					!	Ö	?	"	±		⊗	×	õ	ÿ			

Figure 10-24. Icelandic I/O Interface Code (Not Supported by 3274 and 3276)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	2,3
Bits 4567	Hex 1	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-						{	}	\	0	
0001	1							/		a	j	~		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					□	□	|	:									
1011	B					.	\$,	#									
1100	C					<	*	%	@									
1101	D					()	_	'									
1110	E					+	;	>	=									
1111	F					!	^	?	"									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: *for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation.* IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters when operating in mono-case mode.
3. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. Control codes are assigned code points in shaded areas. See Figure 10-1.

Figure 10-25. International I/O Interface Code

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	← 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	← Hex 0
0000	0					SP	&	-						à	è	ç	0	
0001	1							/		a	j	ı		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9								ù	i	r	z		I	R	Z	9	
1010	A					°	é	ò	:									
1011	B					.	\$,	£									
1100	C					<	*	%	§									
1101	D					()	-	'									
1110	E					+	;	>	=									
1111	F					!	^	?	"									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: *for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation.* IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters when operating in mono-case mode.
3. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. Control codes are assigned code points in shaded areas. See Figure 10-1.

Figure 10-26. Italian I/O Interface Code

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-						{	}	\$	0	
0001	1							/		a	j	-		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					£	!	|	:									
1011	B					.	¥	,	#									
1100	C					<	*	%	@									
1101	D					()	-	'									
1110	E					+	;	>	=									
1111	F					|	└	?	"									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: *for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation.* IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters when operating in mono-case mode.
3. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. Control codes are assigned code points in shaded areas. See Figure 10-1.

Figure 10-27. Japanese English I/O Interface Code

		00				01				10				11				First Hex Char. Bits
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	←0,1
Bits 4567	Hex 1 ↓	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	←2,3 Hex 0
0000	0					SP	&	—			ソ					\$	0	
0001	1					。	エ	/		ア	タ	—		A	J		1	
0010	2					「	オ			イ	チ	ハ		B	K	S	2	
0011	3					」	カ			ウ	ツ	ホ		C	L	T	3	
0100	4					、	ユ			エ	テ	マ		D	M	U	4	
0101	5					・	ヨ			オ	ト	ミ		E	N	V	5	
0110	6					ヲ	ツ			カ	ナ	ム		F	O	W	6	
0111	7					ア				キ	ニ	メ		G	P	X	7	
1000	8					イ	—			ク	ヌ	モ		H	Q	Y	8	
1001	9					ウ				ケ	ネ	ハ		I	R	Z	9	
1010	A					£	!		:	コ	ノ	ユ	レ					
1011	B					。	¥	,	#				□					
1100	C					<	*	%	@	サ		ヨ	ワ					
1101	D					(	)	_	'	シ	ハ	ラ	ン					
1110	E					+	;	>	=	ス	ヒ	リ	ッ					
1111	F					|	フ	?	"	セ	フ	ル	。					

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation. IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
3. Control codes are assigned code points in shaded areas. See Figure 10-1.

Figure 10-28. Japanese Katakana I/O Interface Code

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
Bits 4567	Hex 1	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	—	ø	ø	°		¢	{	}	\	0	
0001	1					RSP	é	/	É	a	j	~	£	A	J		1	
0010	2					â	ê	Â	Ê	b	k	s	¥	B	K	S	2	
0011	3					ä	ë	Ä	Ë	c	l	t		C	L	T	3	
0100	4					à	è	À	È	d	m	u		D	M	U	4	
0101	5					á	í	Á	Í	e	n	v	§	E	N	V	5	
0110	6					ã	î	Ã	Î	f	o	w		F	O	W	6	
0111	7					ä	ï	Ä	Ï	g	p	x		G	P	X	7	
1000	8					ç	ì	Ç	Ì	h	q	y		H	Q	Y	8	
1001	9					ñ	þ	Ñ	˘	i	r	z		I	R	Z	9	
1010	A					[	]	|	:				¬	-			
1011	B					.	\$	,	#				|	ô	û	ô	û	
1100	C					<	*	%	@		æ			ö	ü	ö	ü	
1101	D					(	)	—	'				..	ð	ñ	ð	ñ	
1110	E					+	;	>	=		Æ		/	ó	ú	ó	ú	
1111	F					!	^	?	"		Œ			õ		õ		

Note: Code point CA is a syllable-hyphen character.

Figure 10-29. New Belgian I/O Interface Code (Not Supported by 3274 and 3276)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
Hex 1	Bits 4567																	
0000	0					SP	&	-						{	}	\	0	
0001	1						é	/	É	a	j	..		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t	•	C	L	T	3	
0100	4					à	è	À	È	d	m	u		D	M	U	4	
0101	5					á	í	Á	Í	e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7						ï		Ï	g	p	x		G	P	X	7	
1000	8					ç		Ç		h	q	y		H	Q	Y	8	
1001	9								`	i	r	z		I	R	Z	9	
1010	A					□	□	ñ	:		ä	ï	^	-				
1011	B					•	\$	,	Ñ		ö	¿	!					
1100	C					<	*	%	@						ü		Ü	
1101	D					()	-	'					°		°		
1110	E					+	;	>	=				'	ó	ú	ó	ú	
1111	F					|	└	?	"									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation. IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters when operating in mono-case mode.
3. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. Control codes are assigned code points in shaded areas. See Figure 10-1.
5. Code point CA is a syllable-hyphen character.

Figure 10-30. New Spanish I/O Interface Code

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-						ã	'	ç	0	
0001	1							/		a	j	ç		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					□	□	õ	:									
1011	B					.	\$	,	Ã									
1100	C					<	*	%	õ									
1101	D					()	-	'									
1110	E					+	;	>	=									
1111	F					!	^	?	"									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation. IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters when operating in mono-case mode.
3. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. Control codes are assigned code points in shaded areas. See Figure 10-1.

Figure 10-31. Portuguese I/O Interface Code

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-						ã	'	ç	0	
0001	1							/		a	j	ç		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					□	□	~	:									
1011	B					.	\$	,	Ã									
1100	C					ç	*	%	ö									
1101	D					()	-	'									
1110	E					+	;	>	=									
1111	F					!	^	?	"									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: *for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation.* IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters when operating in mono-case mode.
3. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. Control codes are assigned code points in shaded areas. See Figure 10-1.

Figure 10-32. Portuguese (Alternate) I/O Interface Code (Not Supported by 3174)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	2,3
Bits 4567	Hex 1 ↓	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	—	√	~	°	ø	•	{	}	\	0	
0001	1						é	/	É	a	j	~	À	A	J	+	1	
0010	2						e		Ê	b	k	s	ž	B	K	S	2	
0011	3					ä	ë	Ä	Ë	c	l	t		C	L	T	3	
0100	4						ü	"	Û	d	m	u	ž	D	M	U	4	
0101	5					á	í	Á	Í	e	n	v	š	E	N	V	5	
0110	6					ä				f	o	w	ž	F	O	W	6	
0111	7					č	ý	Č	Ý	g	p	x	ž	G	P	X	7	
1000	8					š	í	Š	Í	h	q	y	ž	H	Q	Y	8	
1001	9					é	ß	Ć	`	i	r	z	Ž	I	R	Z	9	
1010	A					[	]	I	:	š	ť	Š	č	-	ě	ď	Ď	
1011	B					.	\$	,	#	ň	ń	Ň	Ň	ô	ú	Ô	Ů	
1100	C					<	*	%	@	đ	š	Đ	Š	ö	ü	Ö	Ü	
1101	D					(	)	—	'	ý	š	Ý	“	í	ť	Ř	Ť	
1110	E					+	;	>	=	ř	č	Ř	’	ó	ú	Ó	Ú	
1111	F					!	^	?	"		œ		x	ó	ě	Ů		

Figure 10-33. ROECE Latin I/O Interface Code (Not Supported by 3274 and 3276)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
Hex 1	Bits 4567																	
0000	0					SP	&	-						{	}	\	0	
0001	1							/		a	j	..		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9								'	i	r	z		I	R	Z	9	
1010	A					¡	□	ñ	:									
1011	B					•	Pts	,	Ñ									
1100	C					<	*	%	@									
1101	D					()	_	'									
1110	E					+	;	>	=									
1111	F					|	└	?	"									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation. IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters when operating in mono-case mode.
3. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. Control codes are assigned code points in shaded areas. See Figure 10-1.

Figure 10-34. Spanish I/O Interface Code

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-									0	
0001	1							/		a	j			A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					¢	!	¡	:									
1011	B					.	Pts	,	Ñ									
1100	C					<	*	%	@									
1101	D					()	,	'									
1110	E					+	;	>	=									
1111	F					|	—	?	ñ									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation. IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lower-case characters are displayed or printed as uppercase characters when operating in mono-case mode.
3. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. Control codes are assigned code points in shaded areas. See Figure 10-1.

Figure 10-35. Spanish (Alternate) I/O Interface Code (Not Supported by 3174)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-						{	}	\	0	
0001	1							/		a	j	..		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9								`	i	r	z		I	R	Z	9	
1010	A					□	≡	ñ	:									
1011	B					.	\$	,	Ñ									
1100	C					<	*	%	@									
1101	D					()	-	'									
1110	E					+	;	>	=									
1111	F					|	└	?	"									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation. IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters when operating in mono-case mode.
3. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.
4. Control codes are assigned code points in shaded areas. See Figure 10-1.

Figure 10-36. Spanish-Speaking I/O Interface Code

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
Hex 1	Bits 4567					SP	&	-						{	}	\	0	
0000	0																	
0001	1						é	/		a	j	~	£	A	J		1	
0010	2					^ a	^ e			b	k	s		B	K	S	2	
0011	3					ä	ö	Ä		c	l	t		C	L	T	3	
0100	4					^ a	^ e			d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6						^ i			f	o	w		F	O	W	6	
0111	7						ï			g	p	x		G	P	X	7	
1000	8					ç	^ i			h	q	y		H	Q	Y	8	
1001	9								^	i	r	z		I	R	Z	9	
1010	A					□	□	|	:									
1011	B					.	\$	,	#					^ o	^ u			
1100	C					<	*	%	@					ö	ü	Ö	Ü	
1101	D					(	)	_	'				..	ò	ù			
1110	E					+	;	>	=									
1111	F					!	^	?	"									

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: *for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation.* IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters when operating in mono-case mode.
3. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.

Figure 10-37. Swiss-French and Swiss-German I/O Interface Code (Not Supported by 3174)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-	ø		°		¢	{	}	\	0	
0001	1						é	/	É	a	j	~	£	A	J		1	
0010	2					^ a	^ e			b	k	s		B	K	S	2	
0011	3					ä	ë	Ä		c	l	t		C	L	T	3	
0100	4					^ a	^ e			d	m	u		D	M	U	4	
0101	5					á	í			e	n	v	§	E	N	V	5	
0110	6						^ i			f	o	w		F	O	W	6	
0111	7						ï			g	p	x		G	P	X	7	
1000	8					§	^ i			h	q	y		H	Q	Y	8	
1001	9					ñ		Ñ	^ i	i	r	z		I	R	Z	9	
1010	A					□	□	□	:				┐					
1011	B					.	\$	,	#				|	^ o	^ u			
1100	C					<	*	%	@					ö	ü	Ö	Ü	
1101	D					(	)	_	'				..	ò	ù			
1110	E					+	;	>	=				/	ó	ú			
1111	F					!	^	?	"						ÿ			

Notes:

1. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: *for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation.* IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
2. Although the lowercase alphabetic characters (within dotted outlined areas) are stored in the display or printer buffer, the lowercase characters are displayed or printed as uppercase characters when operating in mono-case mode.
3. Attribute, WCC, CCC, CU and device address, buffer address, sense, and status byte values are assigned so that each can be represented by a graphic character within the solid outlined portion of this figure.

Figure 10-38. Swiss-French and Swiss-German Extended I/O Interface Code (Not Supported by 3274 and 3276)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
Hex 1 ↓		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0						&	-	฿				○	{	}	\	0	
0001	1						.	/		a	j	~	๑	A	J		1	
0010	2					ก	จ	ฉ	ญ	b	k	s	๒	B	K	S	2	
0011	3					ข	ฉ	ฉ	ก	c	l	t	๓	C	L	T	3	
0100	4					ด	ช	ก	ด	d	m	u	๔	D	M	U	4	
0101	5					ค	ช	ค	น	e	n	v	๕	E	N	V	5	
0110	6					ค	ด	น	บ	f	o	w	๖	F	O	W	6	
0111	7					ข	ญ	ด	ป	g	p	x	๗	G	P	X	7	
1000	8					ง	ฉ	ด	ผ	h	q	y	๘	H	Q	Y	8	
1001	9								`	i	r	z	๙	I	R	Z	9	
1010	A					¢	!	!	:	ผ	ร	๒	๓		.	๓	+	
1011	B					.	\$	.	#	พ	ร	๒	๓	๔	๔	๔	๔	
1100	C					<	*	%	@	พ	ล	ห	๔	๔	๔	๔	๔	
1101	D					(	)	-	'	ภ	ภ	พ	๓	๔	๔	'		
1110	E					+	;	>	=	ม	ว	อ	๓	๔	๔	๔	๔	
1111	F					|	๓	?	"	ย	ค	๒	๓	๔	๔	๔	EO	

Figure 10-38.1. Thai I/O Interface Code (Not Supported by 3274 and 3276)











		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
Bits 4567	Hex 1	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	—		˘	°	μ	•	ç	ğ	ü	0	
0001	1						é	/	É	a	j	ö	¸	A	J	+	1	
0010	2					â	ê	Â	Ê	b	k	s	z	B	K	S	2	
0011	3					ä	ë	Ä	Ë	c	l	t	}	C	L	T	3	
0100	4					à	è	À	È	d	m	u	ž	D	M	U	4	
0101	5					á	í	Á	Í	e	n	v	š	E	N	V	5	
0110	6						î		Î	f	o	w	]	F	O	W	6	
0111	7					ç	ï	Ç	Ï	g	p	x		G	P	X	7	
1000	8					{	ı	[	İ	h	q	y	½	H	Q	Y	8	
1001	9					ñ	β	Ñ	ı	i	r	z	\$	I	R	Z	9	
1010	A					ç	ğ	ş	:	n	h	ı	ı	—	˘	²	³	
1011	B					.	ı	,	Ö	ê	ğ	Ç	Ğ	ô	û	Ô	Û	
1100	C					<	*	%	§		ı		ı	~	\	#	"	
1101	D					(	)	—	'	ü	,	Ů	..	ò	ù	ò	ù	
1110	E					+	;	>	=				˘	ó	ú	ó	ú	
1111	F					!	^	?	Ü		⌘	@	x	ğ		Ğ		

Figure 10-39. Turkish I/O Interface Code (Not Supported by 3274 and 3276)

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		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
Bits 4567	Hex 1																	
0000	0					SP	&	—	√	√	°	q	•	{	}	\	0	
0001	1						é	/	É	a	j	~	À	A	J	+	1	
0010	2						è		È	b	k	s	ž	B	K	S	2	
0011	3					ä	ë	Ä	Ë	c	l	t		C	L	T	3	
0100	4						ù	"	Û	d	m	u	ž	D	M	U	4	
0101	5					á	í	Á	Í	e	n	v	š	E	N	V	5	
0110	6					ă				f	o	w	ž	F	O	W	6	
0111	7					č	ý	Č	Ý	g	p	x	ž	G	P	X	7	
1000	8					č	í	Č	Í	h	q	y	ž	H	Q	Y	8	
1001	9					č	β	Č	`	i	r	z	ž	I	R	Z	9	
1010	A					[	]	|	:	š	t	š	ž	-	ž	đ	Đ	
1011	B					.	\$	,	#	ñ	ñ	Ñ	Ñ	ô	ú	ô	ú	
1100	C					<	*	%	@	đ	š	Đ	Š	ö	ü	Ö	Ü	
1101	D					(	)	—	'	ý	•	Ý	•	í	ý	Í	Ý	
1110	E					+	;	>	=	ý	•	Ý	•	ó	ú	Ó	Ú	
1111	F					!	^	?	"		⌘		x	ó	ý	Ó	Ú	

Figure 10-40. Yugoslav I/O Interface Code (Not Supported by 3274 and 3276)

Bits 4567		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0									~	□	—	α	{	}		0	
0001	1					<u>A</u>	<u>J</u>		^			°	ε	(	)	1	1	
0010	2					<u>B</u>	<u>K</u>	<u>S</u>	..			—	ι	+	-	2	2	
0011	3					<u>C</u>	<u>L</u>	<u>T</u>				•	ρ	■	+	3	3	
0100	4					<u>D</u>	<u>M</u>	<u>U</u>				n	ω	L	J		4	
0101	5					<u>E</u>	<u>N</u>	<u>V</u>						Γ	Γ		5	
0110	6					<u>F</u>	<u>O</u>	<u>W</u>					X	⌊	⌋		6	
0111	7					<u>G</u>	<u>P</u>	<u>X</u>					\	⊥	T		7	
1000	8					<u>H</u>	<u>Q</u>	<u>Y</u>	V				÷	\$	¶		8	
1001	9					<u>I</u>	<u>R</u>	<u>Z</u>									9	
1010	A									↑	⊃	∩	∇	A	I	/		
1011	B									↓	⊂	∪	Δ	∇	!	∖	∇	
1100	C									≤	≠	⊥	T		ψ		Δ	
1101	D									Γ	O	[	]	φ	Δ	⊖	⊖	
1110	E									L	±	≥	≠		⊖	⊖	⊖	
1111	F									→	←	°	l	⊖	⊖	⊖		

Notes:

1. These codes, each preceded by a Graphic Escape (hex 08) control character, transmit the graphics shown.
2. I/O interface code assignments other than those shown are undefined. If an undefined code is programmed, it is displayed or printed as a hyphen (hex 60). The control unit will return the hyphen, not the original code, during a subsequent read operation. There is one exception: *for 3274 control units with Configuration Support C, D, or T installed, undefined character codes from hex 40 to hex FE cause display or printing of an unspecified character; however, the undefined character code is returned, as received, during a subsequent read operation.* IBM reserves the right to change, at any time, the character displayed or printed and the I/O interface code returned for all undefined codes.
3. For 3274 control units with Configuration Support C installed, codes 0800 through 083F or 08FF cause a negative response (SNA) or an Op Chk (BSC).
4. The 10 graphic plot characters within the bold-outlined area cannot be entered from either the APL or the Text keyboard.

Legend:



Superscript:

Subscript

Figure 10-41. APL/Text Feature, 2-Byte I/O Interface Code (3274, 3179, 3278, 3279, and 3287 Model 1 or 2)

		00				01				10				11				Bits 0.1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	2.3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
Bits 4567	Hex 1																	
0000	0					SP	&	-				-	0	{	}	\	0	
0001	1							/		a	j	~°	1	A	J		1	
0010	2									b	k	s	2	B	K	S	2	
0011	3									c	l	t	3	C	L	T	3	
0100	4									d	m	u	4	D	M	U	4	
0101	5									e	n	v	5	E	N	V	5	
0110	6									f	o	w	6	F	O	W	6	
0111	7									g	p	x	7	G	P	X	7	
1000	8									h	q	y	8	H	Q	Y	8	
1001	9								,	i	r	z	9	I	R	Z	9	
1010	A					¢	!	!	:									
1011	B					.	\$	,	#	{	}	L	┘					
1100	C					<	•	%	@	≤	≠	┌	┐					
1101	D					()	—	•	()	[]					
1110	E					+	;	>	=	+	±	≥	≠					
1111	F					|	┘	?	"	+	■	•	—					

Note: Character code hex A1 causes a ° (degree) character to print when the 3289 Text Print belt is installed, and a ~ character when a U.S. English 3289 print belt is installed.

Legend:



Superscript

Figure 10-42. 3289 Text Print Feature I/O Interface Code

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
Bits 4567	Hex 1																	
0000	0					SP	&	—						NU 10	NU 11	NU 12	0	
0001	1							/		a	j	NU9		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9								NU4	i	r	z		I	R	Z	9	
1010	A					NU1	NU2	NU3	:									
1011	B					.	NU5	,	NU6									
1100	C					<	*	%	NU7									
1101	D					()	—	'									
1110	E					+	;	>	=									
1111	F					NU 13	NU8	?	NU 14									

Note: National-use (NU) differences are shown in Part 2 of this figure.

Figure 10-43 (Part 1 of 2). National-Use Differences EBCDIC I/O Interface Code

National Use Number I/O Hex Code Controller Language Device	1 4A	2 5A	3 6A	4 79	5 5B	6 7B	7 7C	8 5F	9 A1	10 C0	11 D0	12 E0	13 4F	14 7F
Austrian/German	Ä	Ü	ö	‘	\$	#	§	^	β	ä	ü	Ö	!	"
Austrian/German (Alternate)	ö	ü	β		Ü	Ä	Ö	¬					|	ä
Belgian	[	]	ù	‘	\$	#	‘a	^	..	e’	‘e	¢	!	"
Brazilian	É	\$	¢	ã	¢	Õ	Ã	^	~	õ	e’	\	!	"
Canadian Bilingual	¢	!	|	‘	\$	#	@	¬	~	{	}	\	|	"
Canadian French	‘a	/	ù	‘	\$	#	@	^	..	e’	‘e	§	!	"
Danish/Norwegian	#	π	φ	‘	Å	Æ	Ø	^	ü	æ	g	\	!	"
Danish/Norwegian (Alternate)	φ	g	|		Å	Æ	Ø	¬					|	æ
English (U.K.)	\$	!	|	‘	£	#	@	¬	—	{	}	\	|	"
English (U.S.) (EBCDIC)	¢	!	|	‘	\$	#	@	¬	~	{	}	\	|	"
Finnish/Swedish	§	π	ö	e’	Ä	Å	Ö	^	ü	ä	a	É	!	"
Finnish/Swedish (Alternate)	ö	a	|		Ä	Å	Ö	¬					|	ä
French	o	§	ù	‘	\$	£	‘a	^	..	e’	è	¢	!	"
French AZERTY	o	§	ù	v	\$	£	‘a	^	..	é	è	¢	!	"
Hebrew (National Bulletin)	¢	!	|	‘	\$	#	@	¬	~	{	}	\	|	"
Hebrew (New, Post Aleph)	\$	ⴌ	|	‘	ⴌ	#	@	¬	~	{	}	\	|	"
Hebrew (Old, Post Aleph)	\$	!			ⴌ	#	@	¬					|	"
International	[	]	|	‘	\$	#	@	^	~	{	}	\	!	"
Italian	o	e’	ò	ù	\$	£	§	^	‘	‘a	è	¢	!	"
Japanese/English	£	!	|	‘	¥	#	@	¬	—	{	}	\$	|	"
Japanese Katakana	£	!			¥	#	@	¬	—			\$	|	"
Portuguese	[	]	õ	‘	\$	Ã	Ô	^	¢	ã	/	¢	|	"
Portuguese (Alternate)	[	]	õ	‘	\$	Ã	Ô	^	¢	ã	/	¢	!	"
Spanish	[	]	ñ	‘	Pts	Ñ	@	¬	..	{	}	\	|	"
Spanish (Alternate)	¢	!	|		Pts	Ñ	@	¬					|	ñ
Spanish-Speaking	[	]	ñ	‘	\$	Ñ	@	¬	..	{	}	\	|	"
Swiss-French and Swiss-German	[	]	|	‘	\$	#	@	^	~	{	}	\	!	"

Figure 10-43 (Part 2 of 2). National-Use Differences EBCDIC I/O Interface Code

Character	Codes to 3274		I/O Codes to Host	
	Hex		EBCDIC	ASCII
0	0		F0	30
1	1		F1	31
2	2		F2	32
3	3		F3	33
4	4		F4	34
5	5		F5	35
6	6		F6	36
7	7		F7	37
8	8		F8	38
9	9		F9	39
Space	D		40	20

Note: The hex codes shown are those that can be used in the magnetic-stripe data section.

Figure 10-44. Numeric Character Set I/O Interface Code

Character	Codes to 3274		I/O Codes to Host	
	Hex		EBCDIC	ASCII
0	0A	See Note 5 ↑ ↓	F0	30
1	1A		F1	31
2	2A		F2	32
3	3A		F3	33
4	4A		F4	34
5	5A		F5	35
6	6A		F6	36
7	7A		F7	37
8	8A		F8	38
9	9A		F9	39
00	00		F0, F0	30, 30
01	01		F0, F1	30, 31
02	02		F0, F2	30, 32
⋮	⋮	See Note 5 ↑ ↓	⋮	⋮
97	97		F9, F7	39, 37
98	98		F9, F8	39, 38
99	99		F9, F9	39, 39
A	C1		C1	41
B	C2		C2	42
C	C3		C3	43
D	C4		C4	44
E	C5		C5	45
F	C6		C6	46
G	C7		C7	47
H	C8		C8	48
I	C9		C9	49
J	D1		D1	4A
K	D2		D2	4B
L	D3		D3	4C
M	D4		D4	4D
N	D5		D5	4E
O	D6		D6	4F
P	D7		D7	50
Q	D8		D8	51
R	D9		D9	52
S	E2		E2	53
T	E3		E3	54
U	E4		E4	55
V	E5		E5	56
W	E6		E6	57
X	E7		E7	58
Y	E8		E8	59
Z	E9		E9	5A
⋮	⋮		⋮	⋮
!	0C		4A	5B ([)
:	1C		5A	5D (])
<	3C		7A	3A
*	4C		4C	3C
%	5C		5C	2A
@	6C		6C	25
.	7C		7C	40
\$	0D		4B	2E
,	1D		5B	24
#	2D		6B	2C
(	3D		7B	23
)	4D		4D	28
-	5D		5D	29
'	6D		6D	5F
|	7D		7D	27
	0E		4F	21 (I)

Figure 10-45 (Part 1 of 2). Alphanumeric Character Set I/O Interface Code

Character	Codes to 3274		I/O Codes to Host	
	Hex		EBCDIC	ASCII
¬	1E		5F	5E (^)
?	2E		6F	3F
"	3E		7F	22
+	4E		4E	2B
;	5E		5E	3B
>	6E		6E	3E
=	7E		7E	3D
\	E0		E0	5C
/	E1		61	2F
&	DA		50	26
-	EA		60	2D
Space	CA		40	20

Notes:

1. The hex codes shown are those that can be used in the magnetic-stripe data section.
2. The MSR/MHS character codes listed are U.S. EBCDIC/ASCII codes only. For the graphic-character equivalents of the EBCDIC/ASCII codes for other countries, refer to the appropriate national code chart of the Americas/Far East or Europe/Middle East/Africa country or to the National-Use Differences EBCDIC I/O Interface Code chart (Figure 10-43).
3. For 1970 Austria/Germany, Denmark, Finland, Norway, Spain, and Sweden MSR language tables, a card encoded with hex E0 is rejected.
4. For 1970 Portugal MSR language table, a card encoded with hex 4C is rejected.
5. Numeric characters are coded in 4-bit pairs. As a result, there must be either an even number of numeric characters in any continuous string of numerics or an odd number of numerics with a filler character. Hex A (1010) is used as the filler character. For example: the code sequence for 12XYZ is hex 12E7E8E9; the code sequence for 123XYZ is hex 123AE7E8E9. This limits the number of characters to 62 alphabetic and special characters and 124 numeric characters.

Figure 10-45 (Part 2 of 2). Alphanumeric Character Set I/O Interface Code

Control Unit With	Display or Printer	
	Without ECSA ¹	With ECSA ¹
Configuration Support A and B; code points <i>not</i> preceded by X'08'	All unsupported control code points or unsupported graphic code points are replaced with hyphen code points in the data buffer.	
Configuration Support B; code points X'nn' preceded by X'08'	X'08nn' is replaced by a single hyphen code point in the data buffer.	For X'nn' equal to all control code points and unsupported APL code points, X'08nn' is replaced by a hyphen code point in the data buffer.
Configuration Support C, D, and T; code points <i>not</i> preceded by X'08'	<p>For Category A displays: (1) a hyphen code point replaces code point CE, CF, DD,² DE, DF,² ED, EE, EF, and FE in the data buffer, (2) a negative response is given to control code points in the range X'00' to X'3F' and X'FF' except for code points 00, 05, 08, 0C, 0D, 11, 12, 13, 15, 19, 1C, 1D, 1E, and 3C, and (3) graphic code points X'40' to 'FE', except as noted above, are stored in the data buffer and returned in subsequent read operations.</p> <p>For Category B displays: (1) Unsupported graphic code points in the range X'40' to X'FE' are replaced with a hyphen code point in the data buffer, and (2) a negative response is given as described above for Category A.</p>	<p>A negative response is given to unsupported control code points in the range X'00' to X'3F'.</p> <p>All code points in the range X'40' to X'FE' plus X'3F' and X'FF' are stored in the data buffer and returned in subsequent read operations.</p>
Configuration Support C, D, and T; code points X'nn' preceded by X'08'	For X'nn' equal to X'00' through X'3F' or X'FF', a negative response is returned.	
	For X'nn' equal to X'40' through X'FE' X'08nn' is replaced by a single hyphen code point in the data buffer.	For X'nn' equal to all unsupported APL code points, X'08nn' is replaced by a single hyphen code point in the data buffer.

¹Extended character set adapter

²CD for Canadian French Bilingual, not DD

FD for Swiss-French, not DD

FD for Swiss-German, not DF

66 for French AZERTY (105), not DF

Figure 10-46. Matrix for Hyphenation and Negative Responses, 3274 Control Unit

Control Unit With	Display or Printer	
	Without ECSA ¹	With ECSA ¹
Code points <i>not</i> preceded by X'08'	For Category A displays: (1) a hyphen code point replaces code point CE, CF, DD, ² DE, DF, ² ED, EE, EF, and FE in the data buffer, (2) a negative response is given to control code points in the range X'00' to X'3F' and X'FF' except for code points 00, 05, 08, 0C, 0D, 11, 12, 13, 15, 19, 1C, 1D, 1E, and 3C, and (3) graphic code points X'40' to 'FE', except as noted above, are stored in the data buffer and returned in subsequent read operations.	A negative response is given to unsupported control code points in the range X'00' to X'3F'. All code points in the range X'40' to X'FE' plus X'3F' and X'FF' are stored in the data buffer and returned in subsequent read operations.
Code points X'nn' preceded by X'08'	For X'nn' equal to X'00' through X'3F' or X'FF', a negative response is returned.	
	For X'nn' equal to X'40' through X'FE' X'08nn' is replaced by a single hyphen code point in the data buffer.	For X'nn' equal to all unsupported APL code points, X'08nn' is replaced by a single hyphen code point in the data buffer.

¹ Extended character set adapter

² CD for Canadian French Bilingual, not DD

FD for Swiss-French, not DD

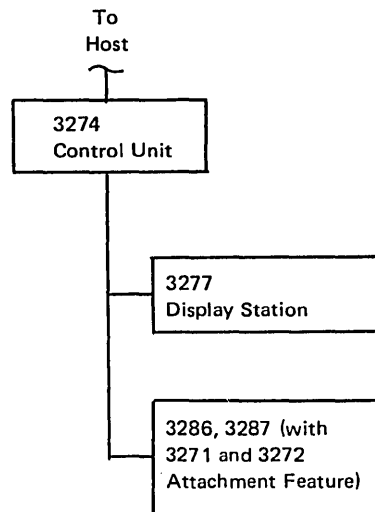
FD for Swiss-German, not DF

66 for French AZERTY (105), not DF

Figure 10-47. Matrix for Hyphenation and Negative Responses, 3174 Subsystem Control Unit

Chapter 11. 3277, 3286, and 3287 I/O Interface Codes (3274 Attachment)

This chapter contains all the I/O interface codes (Figures 11-1 through 11-21) that support the 3277 Display Station keyboards and the 3286 and 3287 printers when used in conjunction with the 3274 Control Unit of the 3270 Information Display System. Included is a figure (Figure 11-21) that illustrates the differences in I/O interface codes for the various national languages that are supported by the 3270 Information Display System. The interface codes, both for the United States and for World Trade countries, are presented in alphabetic order.



		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-						ä	ü	ö	0	
0001	1							/		a	j	ß		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					Ä	Ö	ö	:									
1011	B					.	%	,	+									
1100	C					<	*	%	?									
1101	D					()	-	'									
1110	E					+	;	>	=									
1111	F					|	¬	?	≡									

Legend:








-  Stored as lowercase. Displayed as lowercase on dual-case station; displayed as uppercase on mono-case display station.
-  Stored as a lowercase symbol. Displayed on mono-case display station. Cannot be entered from the keyboard.
-  Stored as shown. Displayed as shown on mono-case display station. Displayed as lowercase accented character on dual-case display station and as shown in Figure 10-43. May be entered from the keyboard.
-  Displayed on dual-case display station only.
-  or  Cannot be entered from the keyboard or displayed.
-  Invalid I/O code point. Stored and displayed as - (hyphen). Hex 60 returned over I/O.

Figure 11-1. Austrian/German I/O Interface Code (3274 and 3277)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-										0
0001	1							/		a	j			A	J			1
0010	2									b	k	s		B	K	S		2
0011	3									c	l	t		C	L	T		3
0100	4									d	m	u		D	M	U		4
0101	5									e	n	v		E	N	V		5
0110	6									f	o	w		F	O	W		6
0111	7									g	p	x		G	P	X		7
1000	8									h	q	y		H	Q	Y		8
1001	9									i	r	z		I	R	Z		9
1010	A					ö	ü	ß	:									
1011	B					.	Ü	,	Ä									
1100	C					<	*	%	Ö									
1101	D					()	-	'									
1110	E					+	;	>	=									
1111	F					|	┐	?	ä									

Legend:








-  Stored as lowercase. Displayed as lowercase on dual-case display station; displayed as uppercase on mono-case display station.
-  Stored as a lowercase symbol. Displayed on mono-case display station. Cannot be entered from the keyboard.
-  Stored as shown. Displayed as shown on mono-case display station. Displayed as lowercase accented character on dual-case display station and as shown in Figure 10-43. May be entered from the keyboard.
-  Displayed on dual-case display station only.
-  or  Cannot be entered from the keyboard or displayed.
-  Invalid I/O code point. Stored and displayed as - (hyphen). Hex 60 returned over I/O.

Figure 11-2. Austrian/German (Alternate) I/O Interface Code (3274 and 3277)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
Hex 1		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-	i					AA	6A	ç	0	
0001	1							/		a	j	"		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					¢	!	~	:									
1011	B					.	\$,	#									
1100	C					<	*	%	@									
1101	D					()	_	'									
1110	E					+	;	>	=									
1111	F					|	¬	?	"									

Legend:






-  Stored as lowercase. Displayed as lowercase on dual-case display station; displayed as uppercase on mono-case display station.
-  Stored as a lowercase symbol. Displayed on mono-case display station. Cannot be entered from the keyboard.
-  Stored as shown. Displayed on mono-case display station. Displayed as lowercase accented character on dual-case display station and as shown in Figure 10-43. May be entered from the keyboard.
-  Displayed on dual-case display station only.
- 6A or AA Cannot be entered from the keyboard or displayed.
-  Invalid I/O code point. Stored and displayed as - (hyphen). Hex 60 returned over I/O.

Figure 11-3. Belgian I/O Interface Code (3274 and 3277)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-						õ	AA	|	0	
0001	1							/		a	j	-		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9								ã	i	r	z		I	R	Z	9	
1010	A					6A	%	ç	:									
1011	B					.	ç	,	õ									
1100	C					<	*	%	Ã									
1101	D					(,)	'									
1110	E					+	;	>	=									
1111	F					|	¬	?										

Legend:



Stored as lowercase. Displayed as lowercase on dual-case display station; displayed as uppercase on mono-case display station.



Stored as a lowercase symbol. Displayed on mono-case display station. Cannot be entered from the keyboard.



Stored as shown. Displayed as shown on mono-case display station. Displayed as lowercase accented character on dual-case display station and as shown in Figure 10-43. May be entered from the keyboard.



Displayed on dual-case display station only.



6A or AA Cannot be entered from the keyboard or displayed.



Invalid I/O code point. Stored and displayed as - (hyphen). Hex 60 returned over I/O.

Figure 11-4. Brazilian/Portuguese I/O Interface Code (3274 and 3277)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-						AA	6A		0	
0001	1							/		a	j	"		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					¢		!	:									
1011	B					.	\$,	#									
1100	C					<	*	%	@									
1101	D					()	_	'									
1110	E					+	;	>	=									
1111	F					|	⌞	?	”									

Legend:






-  Stored as lowercase. Displayed as lowercase on dual-case display station; displayed as uppercase on mono-case display station.
-  Stored as a lowercase symbol. Displayed on mono-case display station. Cannot be entered from the keyboard.
-  Stored as shown. Displayed as shown on mono-case display station. Displayed as lowercase accented character on dual-case display station and as shown in Figure 10-43. May be entered from the keyboard.
-  Displayed on dual-case display station only.
- 6A or AA Cannot be entered from the keyboard or displayed.
-  Invalid I/O code point. Stored and displayed as - (hyphen). Hex 60 returned over I/O.

Figure 11-5. Canadian-French I/O Interface Code (3274 and 3277)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-						æ	ä	å	0	
0001	1							/		a	j	-		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					+	AA	φ	:									
1011	B					·	Å	,	Æ									
1100	C					<	*	%	Ø									
1101	D					()	_	'									
1110	E					+	;	>	=									
1111	F					|	⌞	?	6A									

Legend:



Stored as lowercase. Displayed as lowercase on dual-case display station; displayed as uppercase on mono-case display station.



Stored as a lowercase symbol. Displayed on mono-case display station. Cannot be entered from the keyboard.



Stored as shown. Displayed as shown on mono-case display station. Displayed as lowercase accented character on dual-case display station and as shown in Figure 10-43. May be entered from the keyboard.



Displayed on dual-case display station only.



6A or AA Cannot be entered from the keyboard or displayed.



Invalid I/O code point. Stored and displayed as - (hyphen). Hex 60 returned over I/O.

Figure 11-6. Danish/Norwegian I/O Interface Code (3274 and 3277)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
Hex 1		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
Bits 4567																		
0000	0					SP	&	-									0	
0001	1							/		a	j			A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					ø	å	6A	:									
1011	B					.	Å	,	Æ									
1100	C					<	*	%	Ø									
1101	D					()	-	'									
1110	E					+	;	>	=									
1111	F					|	⌞	?	æ									

Legend:








-  Stored as lowercase. Displayed as lowercase on dual-case display station; displayed as uppercase on mono-case display station.
-  Stored as a lowercase symbol. Displayed on mono-case display station. Cannot be entered from the keyboard.
-  Stored as shown. Displayed as shown on mono-case display station. Displayed as lowercase accented character on dual-case display station and as shown in Figure 10-43. May be entered from the keyboard.
-  Displayed on dual-case display station only.
-  or  Cannot be entered from the keyboard or displayed.
-  Invalid I/O code point. Stored and displayed as - (hyphen). Hex 60 returned over I/O.

Figure 11-7. Danish/Norwegian (Alternate) I/O Interface Code (3274 and 3277)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-						(	)	|	0	
0001	1							/		a	j	AA		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					\$	!	6A	:									
1011	B					.	£	,	#									
1100	C					<	*	%	@									
1101	D					()	_	'									
1110	E					+	;	>	=									
1111	F					|	¬	?	"									

Legend:






-  Stored as lowercase. Displayed as lowercase on dual-case display station; displayed as uppercase on mono-case display station.
-  Stored as a lowercase symbol. Displayed on mono-case display station. Cannot be entered from the keyboard.
-  Stored as shown. Displayed as shown on mono-case display station. Displayed as lowercase accented character on dual-case display station and as shown in Figure 10-43. May be entered from the keyboard.
-  Displayed on dual-case display station only.
- 6A or AA Cannot be entered from the keyboard or displayed.
-  Invalid I/O code point. Stored and displayed as - (hyphen). Hex 60 returned over I/O.

Figure 11-8. English (U.K.) I/O Interface Code (3274 and 3277)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-						(	)	AA	0	
0001	1							/		a	j	-		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					¢	!	6A	:									
1011	B					.	\$,	#									
1100	C					<	*	%	@									
1101	D					()	_	'									
1110	E					+	;	>	=									
1111	F					|	⌞	?	"									

Legend:






-  Stored as lowercase. Displayed as lowercase on dual-case display station; displayed as uppercase on mono-case display station.
-  Stored as a lowercase symbol. Displayed on mono-case display station. Cannot be entered from the keyboard.
-  Stored as shown. Displayed as shown on mono-case display station. Displayed as lowercase accented character on dual-case display station and as shown in Figure 10-43. May be entered from the keyboard.
-  Displayed on dual-case display station only.
- 6A or AA Cannot be entered from the keyboard or displayed.
-  Invalid I/O code point. Stored and displayed as - (hyphen). Hex 60 returned over I/O.

Figure 11-9. English (U.S.) I/O Interface Code (3274 and 3277)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
Bits 4567	Hex 1					SP	&	—						ä	å	6A		
0000	0																	
0001	1							/		a	j	—		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9								AA	i	r	z		I	R	Z	9	
1010	A					%	+	ö	:									
1011	B					.	Å	,	Ä									
1100	C					<	*	%	Ö									
1101	D					()	—	'									
1110	E					+	;	>	=									
1111	F					|	┐	?	'									

Legend:



Stored as lowercase. Displayed as lowercase on dual-case display station; displayed as uppercase on mono-case display station.



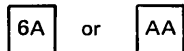
Stored as a lowercase symbol. Displayed on mono-case display station. Cannot be entered from the keyboard.



Stored as shown. Displayed as shown on mono-case display station. Displayed as lowercase accented character on dual-case display station and as shown in Figure 10-43. May be entered from the keyboard.



Displayed on dual-case display station only.



6A or AA Cannot be entered from the keyboard or displayed.







Invalid I/O code point. Stored and displayed as - (hyphen). Hex 60 returned over I/O.

Figure 11-10. Finnish/Swedish I/O Interface Code (3274 and 3277)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-									0	
0001	1							/		a	j			A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					ö	å	6A	:									
1011	B					.	Ä	,	Ä									
1100	C					<	*	%	Ö									
1101	D					()	-	'									
1110	E					+	;	>	=									
1111	F					|	¬	?	ä									

Legend:

-  Stored as lowercase. Displayed as lowercase on dual-case display station; displayed as uppercase on mono-case display station.
-  Stored as a lowercase symbol. Displayed on mono-case display station. Cannot be entered from the keyboard.
-  Stored as shown. Displayed as shown on mono-case display station. Displayed as lowercase accented character on dual-case display station and as shown in Figure 10-43. May be entered from the keyboard.
-  Displayed on dual-case display station only.
- 6A

 or

AA


 Cannot be entered from the keyboard or displayed.
-  Invalid I/O code point. Stored and displayed as - (hyphen). Hex 60 returned over I/O.

Figure 11-11. Finnish/Swedish (Alternate) I/O Interface Code (3274 and 3277)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-						#	!	ç	0	
0001	1							/		a	j	AA		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					6A	?	"	:									
1011	B					.	\$,	#									
1100	C					<	*	%	@									
1101	D					()	_	'									
1110	E					+	;	>	=									
1111	F					|	¬	?	"									

Legend:








-  Stored as lowercase. Displayed as lowercase on dual-case display station; displayed as uppercase on mono-case display station.
-  Stored as a lowercase symbol. Displayed on mono-case display station. Cannot be entered from the keyboard.
-  Stored as shown. Displayed as shown on mono-case display station. Displayed as lowercase accented character on dual-case display station and as shown in Figure 10-43. May be entered from the keyboard.
-  Displayed on dual-case display station only.
-  or  Cannot be entered from the keyboard or displayed.
-  Invalid I/O code point. Stored and displayed as - (hyphen). Hex 60 returned over I/O.

Figure 11-12. French I/O Interface Code (3274 and 3277)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	~						(	)	\	0	
0001	1							/		a	j	-		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					[	]	6A	:									
1011	B					.	\$,	#									
1100	C					<	*	%	@									
1101	D					()	_	'									
1110	E					+	;	>	=									
1111	F					!	^	?	"									

Legend:







-  Stored as lowercase. Displayed as lowercase on dual-case display station; displayed as uppercase on mono-case display station.
-  Stored as a lowercase symbol. Displayed on mono-case display station. Cannot be entered from the keyboard.
-  Stored as shown. Displayed as shown on mono-case display station. Displayed as lowercase accented character on dual-case display station and as shown in Figure 10-43. May be entered from the keyboard.
-  Displayed on dual-case display station only.
-  6A or AA Cannot be entered from the keyboard or displayed.
-  Invalid I/O code point. Stored and displayed as - (hyphen). Hex 60 returned over I/O.

Figure 11-13. International I/O Interface Code (3274 and 3277)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-						ç	!	ç	0	
0001	1							/		a	j	#		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9								"	i	r	z		I	R	Z	9	
1010	A					6A	AA	@	:									
1011	B					.	\$,	#									
1100	C					<	*	%	?									
1101	D					()	_	'									
1110	E					+	;	>	=									
1111	F					|	¬	?	"									

Legend:








-  Stored as lowercase. Displayed as lowercase on dual-case display station; displayed as uppercase on mono-case display station.
-  Stored as a lowercase symbol. Displayed on mono-case display station. Cannot be entered from the keyboard.
-  Stored as shown. Displayed as shown on mono-case display station. Displayed as lowercase accented character on dual-case display station and as shown in Figure 10-43. May be entered from the keyboard.
-  Displayed on dual-case display station only.
-  or  Cannot be entered from the keyboard or displayed.
-  Invalid I/O code point. Stored and displayed as - (hyphen). Hex 60 returned over I/O.

Figure 11-14. Italian I/O Interface Code (3274 and 3277)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-						(	)	\$	0	
0001	1						/			a	j	-		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					#	!	6A	:									
1011	B					.	¢	,	#									
1100	C					<	*	%	@									
1101	D					()	_	'									
1110	E					+	;	>	=									
1111	F					|	¬	?	"									

Legend:







-  Stored as lowercase. Displayed as lowercase on dual-case display station; displayed as uppercase on mono-case display station.
-  Stored as a lowercase symbol. Displayed on mono-case display station. Cannot be entered from the keyboard.
-  Stored as shown. Displayed as shown on mono-case display station. Displayed as lowercase accented character on dual-case display station and as shown in Figure 10-43. May be entered from the keyboard.
-  Displayed on dual-case display station only.
-  6A or AA Cannot be entered from the keyboard or displayed.
-  Invalid I/O code point. Stored and displayed as - (hyphen). Hex 60 returned over I/O.

Figure 11-15. Japanese English I/O Interface Code (3274 and 3277)

		00				01				10				11				First Hex Char. Bits
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	0,1
Bits	Hex	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	2,3
4567	1																	Hex 0
0000	0					SP	&	-			ソ					\$	0	
0001	1					。	エ	/		ア	タ	ー		A	J		1	
0010	2					「	オ			イ	チ	ハ		B	K	S	2	
0011	3					」	カ			ウ	ツ	ホ		C	L	T	3	
0100	4					、	ユ			エ	テ	マ		D	M	U	4	
0101	5					・	ヨ			オ	ト	ミ		E	N	V	5	
0110	6					ヲ	ツ			カ	ナ	ム		F	O	W	6	
0111	7					ア				キ	ニ	メ		G	P	X	7	
1000	8					イ	-			ク	ヌ	モ		H	Q	Y	8	
1001	9					ウ				ケ	ネ	ド		I	R	Z	9	
1010	A					£	!		:	コ	ノ	ユ	レ					
1011	B					・	¥	,	#				□					
1100	C					<	*	%	@	サ		ヨ	ワ					
1101	D					(	)	_	'	シ	ハ	ラ	ン					
1110	E					+	;	>	=	ス	ヒ	リ	ッ					
1111	F					|	フ	?		セ	フ	ル	。					

Notes:

- Character code (hex 40 through hex FF) assignments other than those shown are undefined. If an undefined character code is programmed, the character that will be displayed or printed is a hyphen; hex code 60 will be returned on a subsequent read operation. The character displayed by the 3277 for a given undefined character code may be different for other devices. IBM reserves the right to change, at any time, the character displayed for an undefined character code.
- NL (hex 15), EM (hex 19), FF (hex 0C), and NUL (hex 00) are not displayed or printed. The DUP (hex 1C) and FM (hex 1E) control characters on dual case featured terminals are respectively displayed as * and ; and printed as * and ;.
- DUP (hex 1C) and FM (hex 1E) control characters on mono-case terminals are respectively displayed as * and ; and printed as * and ;.
- When 3277, 3284, 3286, 3287ANR, and 3288 are attached to the 3274, Notes 2 and 3 do not apply. NC (hex 15) is displayed as a . and EM (hex 19) is displayed as a 9.

Legend:



Cannot be entered from the keyboard or displayed.

Figure 11-16. Japanese Katakana I/O Interface Code (3274 and 3277)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-						ã	—	ç	0	
0001	1							/		a	j	ç		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					(	)	õ	:									
1011	B					.	6A	,	ã									
1100	C					<	*	%	õ									
1101	D					()	-	'									
1110	E					+	;	>	=									
1111	F					|	—	?	AA									

Legend:








-  Stored as lowercase. Displayed as lowercase on dual-case display station; displayed as uppercase on mono-case display station.
-  Stored as a lowercase symbol. Displayed on mono-case display station. Cannot be entered from the keyboard.
-  Stored as shown. Displayed as shown on mono-case display station. Displayed as lowercase accented character on dual-case display station and as shown in Figure 10-43. May be entered from the keyboard.
-  Displayed on dual-case display station only.
-  or  Cannot be entered from the keyboard or displayed.
-  Invalid I/O code point. Stored and displayed as - (hyphen). Hex 60 returned over I/O.

Figure 11-17. Portuguese I/O Interface Code (3274 and 3277)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-						(	)	|	0	
0001	1							/		a	j	6A		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					¢	!	ñ	:									
1011	B					.	Pt	,	Ñ									
1100	C					<	*	%	@									
1101	D					()	-	'									
1110	E					+	;	>	=									
1111	F					|	¬	?	AA									

Legend:








-  Stored as lowercase. Displayed as lowercase on dual-case display station; displayed as uppercase on mono-case display station.
-  Stored as a lowercase symbol. Displayed on mono-case display station. Cannot be entered from the keyboard.
-  Stored as shown. Displayed as shown on mono-case display station. Displayed as lowercase accented character on dual-case display station and as shown in Figure 10-43. May be entered from the keyboard.
-  Displayed on dual-case display station only.
-  or  Cannot be entered from the keyboard or displayed.
-  Invalid I/O code point. Stored and displayed as - (hyphen). Hex 60 returned over I/O.

Figure 11-18. Spanish I/O Interface Code (3274 and 3277)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-										0
0001	1							/		a	j			A	J			1
0010	2									b	k	s		B	K	S		2
0011	3									c	l	t		C	L	T		3
0100	4									d	m	u		D	M	U		4
0101	5									e	n	v		E	N	V		5
0110	6									f	o	w		F	O	W		6
0111	7									g	p	x		G	P	X		7
1000	8									h	q	y		H	Q	Y		8
1001	9									i	r	z		I	R	Z		9
1010	A					¢	!	6A	:									
1011	B					.	Pt	,	Ñ									
1100	C					<	*	%	@									
1101	D					()	_	'									
1110	E					+		>	=									
1111	F					|	¬	?	~									

Legend:








-  Stored as lowercase. Displayed as lowercase on dual-case display station; displayed as uppercase on mono-case display station.
-  Stored as a lowercase symbol. Displayed on mono-case display station. Cannot be entered from the keyboard.
-  Stored as shown. Displayed as shown on mono-case display station. Displayed as lowercase accented character on dual-case display station and as shown in Figure 10-43. May be entered from the keyboard.
-  Displayed on dual-case display station only.
-  or  Cannot be entered from the keyboard or displayed.
-  Invalid I/O code point. Stored and displayed as - (hyphen). Hex 60 returned over I/O.

Figure 11-19. Spanish (Alternate) I/O Interface Code (3274 and 3277)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0					SP	&	-						(	)	|	0	
0001	1						/			a	j	6A		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9									i	r	z		I	R	Z	9	
1010	A					¢	!	ñ	:									
1011	B					.	Pt	,	Ñ									
1100	C					<	*	%	@									
1101	D					()	-	'									
1110	E					+	;	>	=									
1111	F					|	¬	?	AA									

Legend:








-  Stored as lowercase. Displayed as lowercase on dual-case display station; displayed as uppercase on mono-case display station.
-  Stored as a lowercase symbol. Displayed on mono-case display station. Cannot be entered from the keyboard.
-  Stored as shown. Displayed as shown on mono-case display station. Displayed as lowercase accented character on dual-case display station and as shown in Figure 10-43. May be entered from the keyboard.
-  Displayed on dual-case display station only.
-  or  Cannot be entered from the keyboard or displayed.
-  Invalid I/O code point. Stored and displayed as - (hyphen). Hex 60 returned over I/O.

Figure 11-20. Spanish-Speaking I/O Interface Code (3274 and 3277)

		00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 2,3
Bits 4567	Hex 1 ↓	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0 ←
0000	0					SP	&	—						NU 10	NU 11	NU 12	0	
0001	1							/		a	j	NU9		A	J		1	
0010	2									b	k	s		B	K	S	2	
0011	3									c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5									e	n	v		E	N	V	5	
0110	6									f	o	w		F	O	W	6	
0111	7									g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9								NU4	i	r	z		I	R	Z	9	
1010	A					NU1	NU2	NU3	:									
1011	B					.	NU5	,	NU6									
1100	C					<	*	%	NU7									
1101	D					()	—	'									
1110	E					+	;	>	=									
1111	F					NU 13	NU8	?	NU 14									

Notes:

1. National-use differences are shown in Part 2 of this figure.
2. 4F becomes a I for Austrian/German, Belgian, Brazilian, French, International, Italian, and Portuguese codes.

Figure 11-21 (Part 1 of 2). National-Use Differences I/O Interface Code (3274 and 3277)

National Use Number I/O Hex Code	1 4A	2 5A	3 6A	4 79	5 5B	6 7B	7 7C	8 5F	9 A1	10 C0	11 D0	12 E0	13 4F	14 7F
Controller Language Device														
Austrian/German	Ä	Ü	ö	,	%	+	?	¬	β	ä	ü	Ö	|	=
Austrian/German (Alternate)	ö	ü	β		Ü	Ä	Ö	¬					|	ä
Belgian	¢	!	—	,	\$	#	@	¬	"	AA	6A	¢	|	"
Brazilian	6A	%	¢	ã	¢	õ	Ã	¬	—	õ	AA	|	|	,
Canadian French	¢	—	!	,	\$	#	@		"	AA	6A	\	|	"
Danish/Norwegian	+	AA	φ	,	Å	Æ	φ	¬	—	æ	å	|	|	6A
Danish/Norwegian (Alternate)	φ	å	6A		Å	Æ	φ	¬					|	æ
English (U.K.)	\$	!	6A	,	£	#	@	¬	AA	(	)	\	|	"
English (U.S.) (EBCDIC)	¢	!	6A	,	\$	#	@	¬	—	(	)	AA	|	"
Finnish/Swedish	%	+	ö	AA	Å	Ä	Ö	¬	—	ä	å	6A	|	,
Finnish/Swedish (Alternate)	ö	å	6A		Å	Ä	Ö	¬					|	ä
French	6A	?	"	,	\$	#	@	¬	AA	#	!	¢	|	"
International	[	]	6A	,	\$	#	@	^	—	(	)	\	|	"
Italian	6A	AA	@	"	\$	#	?	¬	#	¢	!	¢	|	"
Japanese/English	#	!	6A	,	¢	#	@	¬	—	(	)	\$	|	"
Portuguese	(	)	õ	,	6A	Ã	Õ	¬	¢	ã	—	¢	|	AA
Spanish	¢	!	ñ	,	Pt	Ñ	@	¬	6A	(	)	|	|	AA
Spanish (Alternate)	¢	!	6A		Pt	Ñ	@	¬					|	õ
Spanish-Speaking	¢	!	ñ	,	Pt	Ñ	@	¬	6A	(	)	|	|	AA

Legend:



Stored as lowercase. Displayed as lowercase on dual-case display station; displayed as uppercase on mono-case display station.



Stored as a lowercase symbol. Displayed on mono-case display station. Cannot be entered from the keyboard.



Stored as shown. Displayed as shown on mono-case display station. Displayed as lowercase accented character to dual-case display station and as shown in Figure 10-43. May be entered from the keyboard.



Displayed on dual-case display station only.



6A or AA Cannot be entered from the keyboard or displayed.



Invalid I/O code point. Stored and displayed as - (hyphen). Hex 60 returned over I/O.

Figure 11-21 (Part 2 of 2). National-Use Differences I/O Interface Code (3274 and 3277)

Chapter 12. 3270 Character Generators

This chapter contains illustrations that depict the characters that can be generated by 3270 character generators within the 3270 Information Display System terminals. The character generators present a visual reproduction of the character on the display screen of the terminal.

A *standard* character generator is normally used in 3270 display terminals; however, there are cases where a unique character generator is supplied for a particular language.

Figures 12-1 through 12-13 show the character generator contents for the language and display type noted.

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NULL	SP	0	&	`a	ä	À	Ä	a	q	A	Q		P		✈
1	EM	=	1	—	è	ë	È	Ë	b	r	B	R		S		—
2	FF	'	2	.	ì	ï	Ì	Ï	c	s	C	S		Ⓜ		⌞
3	NL	”	3	,	ò	ö	Ò	Ö	d	t	D	T		⤴		—
4	STOP	/	4	:	ù	ü	Ù	Ü	e	u	E	U		Ⓟ		⌚
5	SUP. SKIP	\	5	+	ã	â	Ã	Â	f	v	F	V		Ⓠ		⌚
6	RES	|	6	⌞	õ	ê	Õ	Ê	g	w	G	W		▶		✕
7	RES	|	7	—	ÿ	î	Y	Î	h	x	H	X		□		■
8	>	?	8	°	à	ô	À	Ô	i	y	I	Y		➔		➔
9	<	!	9	∨	è	û	E	Û	j	z	J	Z		⚡		⚡
A	[	\$	β	^	é	á	E	Á	k	æ	K	Æ		↑		Ⓚ
B	]	¢	§	~	ì	é	I	É	l	ø	L	Ø		⤴		⌞
C	)	£	#	..	ò	í	O	Í	m	å	M	Å				④
D	(	¥	@	˘	ù	ó	U	Ó	n	ξ	N	ξ		↓		≠
E	}	Pt	%	/	ü	ú	Y	Ú	o	̄	O	;		?		≡
F	{	⌘	—	˘	ξ	ñ	C	Ñ	p	⌘	P	*		■		Ⓚ

Figure 12-1. Standard 3270 Character Generator

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0			0	&	a	п	А	П	a	q	A	Q	☼	P	⌈	✈
1		=	1	—	б	р	Б	Р	b	r	B	R	Ⓐ	S	Ⓐ	—
2		'	2	.	в	с	В	С	c	s	C	S	Ⓑ	Ⓐ	Ⓒ	↘
3		"	3	,	г	т	Г	Т	d	t	D	T	▶	^	Y	—
4		/	4	:	д	ё	Д	Ё	e	u	E	U	Ⓔ	Ⓓ		⋮
5		\	5	+	ј	у	Ј	У	f	v	F	V	R	Ⓜ		⋮
6		|	6	ц	е	ф	Е	Ф	g	w	G	W	⬠	▶		✕
7		i	7	№	ж	х	Ж	Х	h	x	H	X	P	□		■
8	>	?	8	ѣ	з	ц	З	Ц	i	y	I	Y	||	→		←
9	<	!	9	ѓ	и	ч	И	Ч	j	z	J	Z	|||	⚡		⚡
A	[	\$	!	^	й	ш	Й	Ш	k	я	K	Я		↑		↓
B	]	љ	§	Љ	к	щ	К	Щ	l	ъ	L	Ъ		⚡		
C	)	њ	#	Њ	л	бл	Л	бл	m	ї	M	Ї		Ⓔ		Ⓜ
D	(	ћ	@	Ћ	м	б	М	б	n	s	N	S		↓		Ⓐ
E	ђ	ќ	%	Ќ	н	э	Н	Э	o	ѣ	O	;		Ⓜ		Ⓜ
F	ѓ	ѡ	—	Ѣ	о	ю	О	Ю	p	ѣ	P	*		■		Ⓜ

Note: Supported only by the 3174 Subsystem Control Unit.

Figure 12-2. Cyrillic Character Generator (3179 and 3180 Display Stations)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	0	SP	0	&	à	λ	À	Λ	a	q	A	Q	'/	P	∕	✈
1	1	=	1	—	è	μ	È	M	b	r	B	R	á	S	ó	—
2	2	'	2	.	ì	ν	Ì	N	c	s	C	S	é	Ⓐ	ώ	⚡
3	3	"	3	,	ò	ξ	Ò	Ξ	d	t	D	T	ή	^	ù	—
4	4	/	4	:	ù	ρ	Ù	'	e	u	E	U	ï	Ⓑ	ć	☉
5	5	\	5	+	G	ο	Ã	O	f	v	F	V	G	Ⓜ	~	?
6	6	|	6	⌊	α	π	A	Π	g	w	G	W	α	▶	A	✕
7	7	|	7	—	β	ρ	B	P	h	x	H	X	β	□	B	■
8	>	?	8	°	γ	σ	Γ	Σ	i	y	I	Y	γ	→	Γ	←
9	<	!	9	∇	δ	τ	Δ	T	j	z	J	Z	δ	↩	Δ	↪
A	[	\$	β	^	ε	υ	E	Y	k	æ	K	Æ	ε	↑	E	○
B	]	¢	§	~	ξ	φ	Z	Φ	l	ø	L	Ø	ξ	⚖	Z	⌋
C	)	£	#	..	η	χ	H	X	m	â	M	Â	η	Ⓒ	H	④
D	(	¥	@	˘	θ	ψ	Θ	Ψ	n	ξ	N	Ç	θ	↓	Θ	Ⓐ
E	}	Pt	%	/	ι	ω	I	Ω	o	;	O	;	ι	Ⓜ	I	≡
F	{	⌘	—	˘	k	ς	K	Σ	p	⌘	P	*	k	■	K	Ⓜ

Note: Supported only by the 3174 Subsystem Control Unit.

Figure 12-3. Greek Character Generator (3178, 3278, and 3279 Display Stations)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0			0	&	ā	λ	Á	Λ	a	q	A	Q	⦿	P	⌈	✈
1		=	1	—	é	μ	É	M	b	r	B	R	⌋	S	⌋	—
2		'	2	.	ñ	ν	Ḥ	N	c	s	C	S	⦿	⌈	⌈	—
3		"	3	,	ó	ξ	Ó	Ξ	d	t	D	T	⦿	⌈	⌈	—
4		/	4	:	í	ω	Í	Ω	e	u	E	U	⦿	⌈		⋮
5		â	5	+	û	ο	Υ	O	f	v	F	V	R	⦿		?
6		ê	6	ô	α	π	Α	Π	g	w	G	W	⦿	⌈		×
7		^	7	û	β	ρ	Β	Ρ	h	x	H	X	P	⦿		■
8	>	?	8	°	γ	σ	Γ	Σ	i	y	I	Y	||	→		←
9	<	!	9	ë	δ	τ	Δ	T	j	z	J	Z	|||	⦿		⦿
A	[	\$	ï	^	ε	υ	E	Υ	k	ä	K	Ä		↑		↓
B	]	é	§	ü	ζ	φ	Z	Φ	l	ï	L	ÿ		⦿		
C	)	£	ç	..	η	χ	H	X	m	ö	M	Ö		⦿		⦿
D	(	`	ξ	`	θ	ψ	Θ	Ψ	n	ü	N	Ü		↓		⦿
E	±	è	%	/	ι	ω	I	Ω	o	;	O	;		⦿		⦿
F	½	ù	—	,	k	ς	K	Σ	p	⦿	P	*		■		⦿

Note: Supported only by the 3174 Subsystem Control Unit.

Figure 12-4. Greek Character Generator (3179, 3180, 3191, and 3192 Display Stations)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		SP	0	&	ç	ä	Ç	Ä	a	q	A	Q	q	P	Å	
1		=	1	—	g	ë	G	Ë	b	r	B	R	†	S	Ł	
2		'	2	.	s	ï	Š	İ	c	s	C	S	š		Š	
3		"	3	,	ž	ö	Ž	Ö	d	t	D	T	ž		Ž	
4		/	4	:	ć	ü	Ć	Ü	e	u	E	U	ć		Ć	
5		\	5	+	à	â	À	Â	f	v	F	V	ñ		Ñ	
6		|	6	⌋	ı	ê	Ì	Ê	g	w	G	W	ž		Š	
7		|	7	—	ý	î	Ý	Î	h	x	H	X	š		Š	
8	>	?	8	°	ò	ô	Ò	Ô	i	y	I	Y	e		Ë	
9	<	!	9	∇	ξ	û	Ξ	Û	j	z	J	Z	ξ		Ξ	
A	[	\$	β	^	ð	á	Ð	Á	k	æ	K	Æ	z		Ž	
B	]	¢	§	~	þ	é	Þ	É	l	ø	L	Ø	z		Ž	
C	)	£	#	..	ı	í	ı	Í	m	å	M	Å	ı		ı	
D	(	¥	@	˘	ı	ó	ı	Ó	n	ç	N	Ç	ı		ı	
E	}	Pt	%	˘	ð	ú	Ð	Ú	o	ı	O	;	ı		Ł	
F	{	¤	—	˘	O	ñ	O	Ñ	p	ı	P	ı	ı		½	

Note: Supported only by the 3174 Subsystem Control Unit.

Figure 12-5. Icelandic Character Generator (3178, 3278, and 3279 Display Stations)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		SP	0	&	»	ä	¼	Ä	a	q	A	Q	⌘	P		↖
1		=	1	—	«	ë	½	Ë	b	r	B	R	Ⓐ	S		—
2		'	2	.	ä	ï	È	Ï	c	s	C	S	Ⓢ	Ⓕ		↗
3		"	3	,	ö	ö	=	Ö	d	t	D	T	➤	⤴		—
4		/	4	:	μ	ü	è	Ü	e	u	E	U	Ⓤ	Ⓖ		⋮
5		\	5	+	à	â	À	Â	f	v	F	V	R	Ⓟ		?
6		|	6	⌋	ì	ê	Ì	Ê	g	w	G	W	⚡	▶		✕
7		|	7	—	ý	î	Ý	Î	h	x	H	X	P	□		■
8	>	?	8	°	ò	ô	Ò	Ô	i	y	I	Y	||	➔		←
9	<	!	9	±	f	û	ƒ	Û	j	z	J	Z	|||	⚡		⚡
A	[	\$	β	^	ð	á	Ð	Á	k	æ	K	Æ		↑		↓
B	]	¢	§	~	þ	é	Þ	É	l	ø	L	Ø		⚡		
C	)	£	#	..	¶	í	ù	Í	m	â	M	Å		Ⓔ		④
D	(	¿	@	`	í	ó	²	Ó	n	ξ	N	Ç		↓		Ⓐ
E	}	Pt	%	/	ã	ú	³	Ú	o	̄	O	;		?		≡
F	{	⌘	—	„	®	ñ	ÿ	Ñ	p	⌘	P	*		■		Ⓢ

Note: Supported only by the 3174 Subsystem Control Unit.

Figure 12-6. Icelandic Character Generator (3179, 3180, and 3191 Display Stations)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		SP	0	&	»	ä	¼	Ä	a	q	A	Q	☼	P		✈
1		=	1	—	«	ë	½	Ë	b	r	B	R	☽	S		—
2		'	2	.	ä	ï	È	Ï	c	s	C	S	☼	☼		☼
3		"	3	,	ö	ö	×	Ö	d	t	D	T	☼	☼		—
4		/	4	:	μ	ü	è	Ü	e	u	E	U	☼	☼		☼
5		\	5	+	à	â	À	Â	f	v	F	V	R	☼		☼
6		|	6	⌊	ì	ê	Ì	Ê	g	w	G	W	☼	☼		☼
7		|	7	—	ý	î	Ý	Î	h	x	H	X	P	☼		☼
8	>	?	8	°	ò	ô	Ò	Ô	i	y	I	Y	||	→		←
9	<	!	9	±	©	û	≈	Û	j	z	J	Z	|||	☼		☼
A	[	\$	β	^	ø	á	Ð	Á	k	æ	K	Æ		↑		↓
B	]	¢	§	~	þ	é	Þ	É	l	ø	L	Ø		☼		
C	)	£	#	..	¶	í	ù	Í	m	å	M	Å		☼		☼
D	(	¿	@	˘	i	ó	²	Ó	n	£	N	£		↓		☼
E	}	Pt	%	˘	ã	ú	³	Ú	o	˘	O	;		☼		☼
F	{	¤	—	˘	®	ñ	ÿ	Ñ	p	˘	P	*		☼		☼

Note: Supported only by the 3174 Subsystem Control Unit.

Figure 12-7. Icelandic Character Generator (3192 Display Station)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		SP	0	&	ア	チ	ム	フ	a	q	A	Q		P		ノ
1		=	1	—	イ	ツ	メ	」	b	r	B	R		S		—
2		'	2	.	ウ	テ	モ	,	c	s	C	S		ロ		ニ
3		“	3	,	エ	ト	ホ	.	d	t	D	T		ハ		—
4		/	4	:	オ	ナ	ル	ヲ	e	u	E	U		ヨ		ク
5			5	+	カ	ニ	ヨ	ア	f	v	F	V		コ		シ
6		|	6	フ	キ	ヌ	ラ	イ	g	ω	G	W		ド		ク
7		!	7	—	ク	ネ	リ	ウ	h	x	H	X		ロ		ロ
8	>	?	8		ケ	ノ	ル	エ	i	y	I	Y		→		←
9	<	!	9		コ	ハ	レ	オ	j	z	J	Z		ノ		ノ
A		\$			サ	ヒ	ロ	ア	k		K			↑		ノ
B		¢			シ	フ	ワ	ユ	l		L			人		フ
C	)	£	#		ス	ハ	ン	ヨ	m		M			下		—
D	(¥	@	ノ	セ	ホ	“	ツ	n		N			↓		≠
E	}		%		ソ	マ	°	—	σ	フ	O	;		?		≡
F	{		—		タ	ミ	●	“	尸	※	P	*		田		田

Figure 12-7.1. Japanese Katakana Character Generator

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	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		SP	0	&	à	ä	À	Ä	a	q	A	Q				
1	®	=	1	—	è	ë	È	Ë	b	r	B	R				
2	f	'	2	.	ì	ï	Ì	Ï	c	s	C	S				
3	—	”	3	,	ò	ö	Ò	Ö	d	t	D	T				
4	¼	/	4	:	ù	ü	Ù	Ü	e	u	E	U				
5	¾	\	5	+	ã	â	Ã	Â	f	v	F	V				
6	²	|	6	¬	õ	ê	Õ	Ê	g	w	G	W				
7	³	|	7	—	ÿ	î	±	Î	h	x	H	X				
8	>	?	8	°	þ	ô	Þ	Ô	i	y	I	Y				
9	<	!	9	√	ð	û	Ð	Û	j	z	J	Z				
A	[	\$	β	^	«	á	½	Á	k	æ	K	Æ				
B	]	¢	§	~	ı	é	¿	É	l	ø	L	Ø				
C	)	£	#	..	»	í	ï	Í	m	å	M	Å				
D	(	¥	@	´	¶	ó	ä	Ó	n	£	N	£				
E	}	•	%	´	ý	ú	Ý	Ú	o	£	O	;				
F	{	¤	—	¸	=	ñ	ó	Ñ	p	¸	P	*				

Figure 12-8. New Spanish Character Generator

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0			0	&	č	ä	Č	Ä	a	q	A	Q		P		✂
1		=	1	—	ø	ë	Ů	Ë	b	r	B	R		S		—
2		'	2	.	š	ó	Š	Ó	c	s	C	S		⌚		⚡
3		"	3	,	ž	ö	Ž	Ö	d	t	D	T		^		—
4		/	4	:	ć	ü	Ć	Ü	e	u	E	U		⌚		⋯
5		•	5	+	ž	ś	Ž	Ś	f	v	F	V		⌚		⋯
6		“	6	—	ę	ű	Ę	Ű	g	w	G	W		▶		✕
7		~	7	˘	ý	ž	Ý	Ž	h	x	H	X		□		■
8	>	?	8	°	ı	ô	Ĺ	Ô	i	y	I	Y		→		←
9	<	!	9	˘	ǎ	ť	Ǻ	Ť	j	z	J	Z		⚑		⚑
A	[	\$	β	^	đ	á	Đ	Á	k	ń	K	Ń		↑		○
B	]	\	§	˘	í	é	Í	É	l	ď	L	Ď		⚑		⌌
C	)	|	#	˘	ň	í	Ň	Í	m	ə	M	Ě		⌚		④
D	(	x	@	˘	ř	ó	Ř	Ó	n	š	N	Š		↓		⌚
E	}	÷	%	˘	ě	ú	Ě	Ú	o	ř	O	;		⌚		≡
F	{	⌘	—	˘	ř	†	Ř	Ł	p	⌘	P	*		■		⌚

Note: Supported only by the 3174 Subsystem Control Unit.

Figure 12-9. ROECE Character Generator (3191 and 3192 Display Stations)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0			0	&	ข	ณ	ว	ำ	a	q	A	Q		P		✈
1		=	1	—	ก	ด	ศ	า	b	r	B	R		S		—
2		'	2	.	ด	ค	ช	า	c	s	C	S		๒		↘
3		"	3	,	ณ	ถ	ส	า	d	t	D	T		^		—
4		/	4	:	ข	ท	ห	า	e	u	E	U		๒		⋮
5		\	5	+	ง	อ	อ	า	f	v	F	V		๒		?
6		|	6	๗	จ	น	อ	า	g	w	G	W		▶		✕
7		!	7	ข	ฉ	บ	อ	า	h	x	H	X		□		■
8	>	?	8	ด	ช	ป	อ	า	i	y	I	Y		→		←
9	<	!	9	ภ	ช	พ	อ	า	j	z	J	Z		✕		✕
A		\$	B		ญ	พ	อ	า	k	O	K	๔		↑		○
B		¢	ย	~	ฉ	ภ	อ	า	l	๑	L	๕		✕		๗
C	)	๗	#	๗	ฉ	ร	อ	า	m	๒	M	๖		B		๔
D	(	ม	@	`	ฉ	ถ	'	๗	n	๓	N	๗		↓		๕
E	}	๗	%	๘	ท	ล	๗	๗	o	๔	O	๔		๒		๓
F	{	๒	—	๘	ณ	พ	.	๑	p	๕	P	*		๒		๒

Figure 12-9.1. Thai Character Generator (Not Supported by 3274 and 3276)

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	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		SP	0	&	č	ä	Č	Ä	a	q	A	Q	ä	P	Ä	
1		=	1	—	ǵ	ë	Ǧ	Ë	b	r	B	R	†	S	Ł	
2		'	2	.	ǵ	ï	Ǧ	Ï	c	s	C	S	ǵ		Ǧ	
3		"	3	,	ž	ö	Ž	Ö	d	t	D	T	ž		Ž	
4		/	4	:	é	ü	Ć	Ü	e	u	E	U	ć		Ć	
5		\	5	+	à	â	À	Â	f	v	F	V	ñ		Ñ	
6		|	6	⌋	ı	ê	İ	Ê	g	w	G	W	ž		Š	
7		|	7	—	ý	î	Ý	Î	h	x	H	X	ś		Ś	
8	>	?	8	°	ò	ô	Ò	Ô	i	y	I	Y	ę		Ę	
9	<	!	9	√	ξ	û	Ξ	Û	j	z	J	Z	ξ		Ξ	
A	[	\$	β	^	ð	á	Ð	Á	k	æ	K	Æ	º		º	
B	]	¢	§	~	þ	é	Þ	É	l	ø	L	Ø	ž		Ž	
C	)	E	#	..	ı	í	İ	Í	m	å	M	Å	ï		ı	
D	(	¥	@	˘	ı	ó	İ	Ó	n	ğ	N	Ğ	ı		ı	
E	}	Pt	%	˘	ð	ú	Ð	Ú	o	ı	O	;	ı		L	
F	{	⌘	—	˘	O	ñ	O	Ñ	p	⌘	P	⌘	ı		½	

Note: Supported only by the 3174 Subsystem Control Unit.

Figure 12-10. Turkish Character Generator (3278 and 3279 Display Stations)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0			0	&	ç	ä	Ç	Ä	a	q	A	Q	☼	P		✈
1		=	1	—	ğ	ë	Ğ	Ë	b	r	B	R	☼	S		—
2		'	2	.	ş	ï	Ş	Ï	c	s	C	S	☼	☼		—
3		"	3	,	ž	ö	Ž	Ö	d	t	D	T	☼	^		—
4		/	4	:	ć	ü	Ć	Ü	e	u	E	U	☼	☼		☼
5		\	5	+	à	â	À	Â	f	v	F	V	R	☼		☼
6		|	6	┐	ı	ê	İ	Ê	g	w	G	W	☼	☼		✕
7		|	7	—	ý	^	Ý	Î	h	x	H	X	P	☼		☼
8	>	?	8	°	ò	ô	Ò	Ô	i	y	I	Y	||	→		←
9	<	!	9	√	ξ	û	Ξ	Û	j	z	J	Z	|||	☼		☼
A	[	\$	β	^	ð	á	Ð	Á	k	æ	K	Æ		↑		↓
B	]	¢	§	~	þ	é	Þ	É	l	ø	L	Ø		☼		
C	)	£	#	..	ı	í	İ	Í	m	å	M	Å		☼		☼
D	(	¥	@	˘	ı	ó	İ	Ó	n	ξ	N	Ç		↓		☼
E	}	Pt	%	˘	ð	ú	Ð	Ú	o	˘	O	;		☼		☼
F	{	☼	—	☼	O	ñ	O	Ñ	p	☼	P	*		☼		☼

Note: Supported only by the 3174 Subsystem Control Unit.

Figure 12-11. Turkish Character Generator (3179 and 3180 Display Stations)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0			0	&	ç	ä	Ç	Ä	a	q	A	Q				
1		=	1	—	ğ	ë	Ğ	Ë	b	r	B	R				
2		'	2	.	ğ	ï	Ğ	İ	c	s	C	S				
3		"	3	,	ž	ö	Ž	Ö	d	t	D	T				
4		/	4	:	ê	ü	Ê	Ü	e	u	E	U				
5		\	5	+	à	â	À	Â	f	v	F	V				
6		|	6	~	ı	ê	İ	Ê	g	w	G	W				
7		•	7	—	î	î	Î	Î	h	x	H	X				
8	>	?	8	°	ò	ô	Ò	Ô	i	y	I	Y				
9	<	!	9	x	ξ	û	Ξ	Û	j	z	J	Z				
A	[	\$	β	^	ñ	á	Ñ	Á	k	2	K	3				
B	]	μ	§	~	ñ	é	Ë	É	l	è	L	È				
C	)	£	#	..	ı	ı	ı	ı	m	ù	M	Ù				
D	(	½	@	~	i	ó	ı	Ó	n	ξ	N	ξ				
E	}	÷	%	~	ü	ú	Ü	Ú	o	ı	O	;				
F	{	œ	—	~	ğ	ñ	Ğ	Ñ	p	̄	P	*				

Note: Supported only by the 3174 Subsystem Control Unit.

Figure 12-12. Turkish Character Generator (3191 and 3192 Display Stations)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0			0	&	č	ä	Č	Ä	a	q	A	Q		P		✈
1		=	1	—	ø	ë	Ø	Ë	b	r	B	R		S		—
2		'	2	.	š	ó	Š	Ó	c	s	C	S		Ⓐ		⚡
3		"	3	,	ž	ö	Ž	Ö	d	t	D	T		^		—
4		/	4	:	ć	ü	Ć	Ü	e	u	E	U		Ⓑ		⌢
5		•	5	+	ž	ś	Ž	Ś	f	v	F	V		Ⓔ		⌚
6		“	6	—	ę	ű	Ę	Ű	g	w	G	W		▶		✕
7		~	7	˘	ý	z	Ý	Ž	h	x	H	X		□		■
8	>	?	8	°	ý	ô	Ÿ	Ô	i	y	I	Y		→		←
9	<	!	9	˘	ǎ	ť	Ǻ	Ť	j	z	J	Z		⚡		⚡
A	[	\$	β	^	đ	á	Đ	Á	k	ń	K	Ń		↑		Ⓚ
B	]	\	§	˘	í	é	Í	É	l	ǎ	L	Ǻ		⚡		⌢
C	)	|	#	˘	ň	í	Ň	Í	m	ę	M	Ą		Ⓑ		Ⓔ
D	(	x	@	˘	ř	ó	Ř	Ó	n	š	N	Š		↓		Ⓐ
E	}	÷	%	˘	ě	ú	Ě	Ú	o	˘	O	;		?		Ⓚ
F	{	⌘	—	˘	ř	†	Ř	Ł	p	˘	P	*		■		Ⓔ

Note: Supported only by the 3174 Subsystem Control Unit.

Figure 12-13. Yugoslav Character Generator (3191 and 3192 Display Stations)

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This Technical Newsletter provides replacement pages for the subject publication. The pages to be removed and inserted are as follows:

Pages to Be Removed	Pages to Be Inserted
iii through vi	iii through vi
1-1, 1-2	1-1, 1-2
3-59 through 3-62	3-59 through 3-62
5-1, 5-2	5-1, 5-2
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	10-39, 10-40 (added)
	10-40.1, 10-40.2 (added)
	12-8.1, 12-8.2 (added)
	12-10.1, 12-10.2 (added)

A change to the text or to an illustration is indicated by a vertical line to the left of the change.

Summary of Amendments

This TNL adds an I/O Interchange Code chart and a Character Generator chart for the Thai language, a Japanese Katakana Character Generator chart, two ROECE Latin keyboards, two Yugoslav keyboards, and various minor changes to other pages.

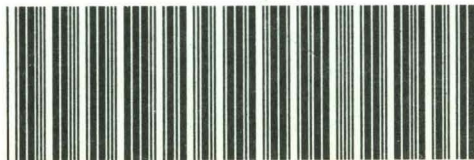
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