IBM 3270
Personal Computer

Supplement to BASIC

by Microsoft Corp.

GA23-0234-0

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Preface

The *Supplement to BASIC* manual is a supplement to "Chapter 2. Using BASIC" of the IBM Personal Computer BASIC reference manual included with your system unit.

This supplement describes the keys that you can use under IBM BASIC on your 3270 Personal Computer keyboard.

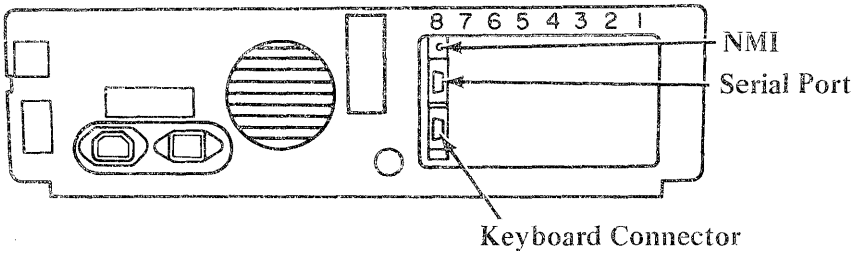
Operating your Keyboard (Using BASIC)

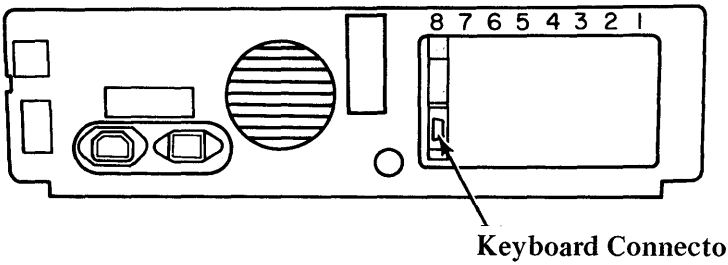
Your IBM 3270 Personal Computer Keyboard operates according to code that is installed in the system unit at the time. If you switch on your system unit and do not load an application or control program, such as DOS, U.S. English IBM BASIC will be loaded from a Read-Only-Memory (ROM) in the system unit. This supplement describes how the keyboard works under the control of this ROM BASIC.

If you are using any other application or control program, refer to the documentation that came with that application for information on how your keyboard will operate. For example, the *IBM 3270 Personal Computer Control Program User's Guide* explains how the keyboard operates under the IBM 3270 Personal Computer Control Program.

This book is designed as a supplement to "Chapter 2. Using BASIC" of the IBM Personal Computer *BASIC* reference manual, included with your system unit. The descriptions are, for the most part, the same as those in the *BASIC* manual because the keys that are functional under IBM BASIC on your IBM 3270 Personal Computer keyboard work almost the same as they do on an ordinary IBM Personal Computer. The main difference is that some keytops look different and some keys are in different locations. The keytops labeled in blue on your IBM 3270 Personal Computer keyboard are personal-computer-only functions.

In this section, text appearing in green refers to the functions that pertain to your IBM 3270 Personal Computer if you have the Serial Port and NMI button on the back of your system unit. If you are not sure which system unit you have, use the following illustrations to compare.





Valid Keys under BASIC

The keys that are valid (functional) under IBM BASIC are highlighted in Figure 1. The keys not highlighted or not green, are functional only under other application software.

Typematic Keys under BASIC

The keys that are typematic under IBM BASIC are highlighted or green in Figure 2.

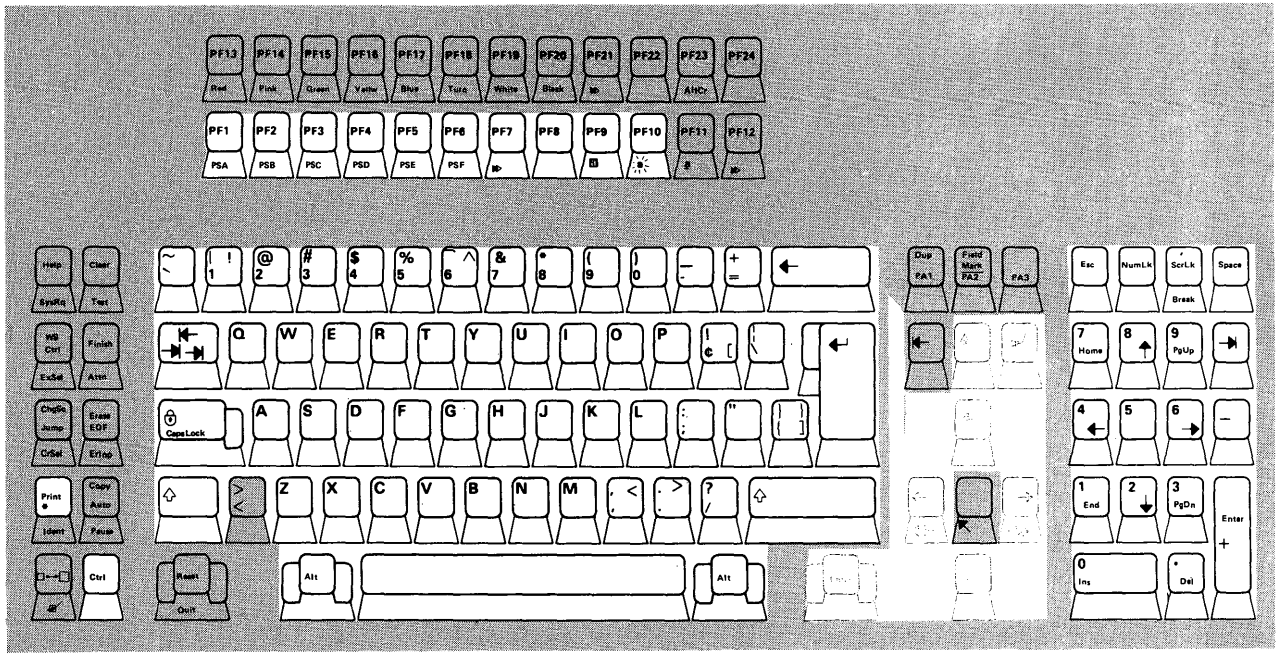


Figure 1. Valid Keys under BASIC

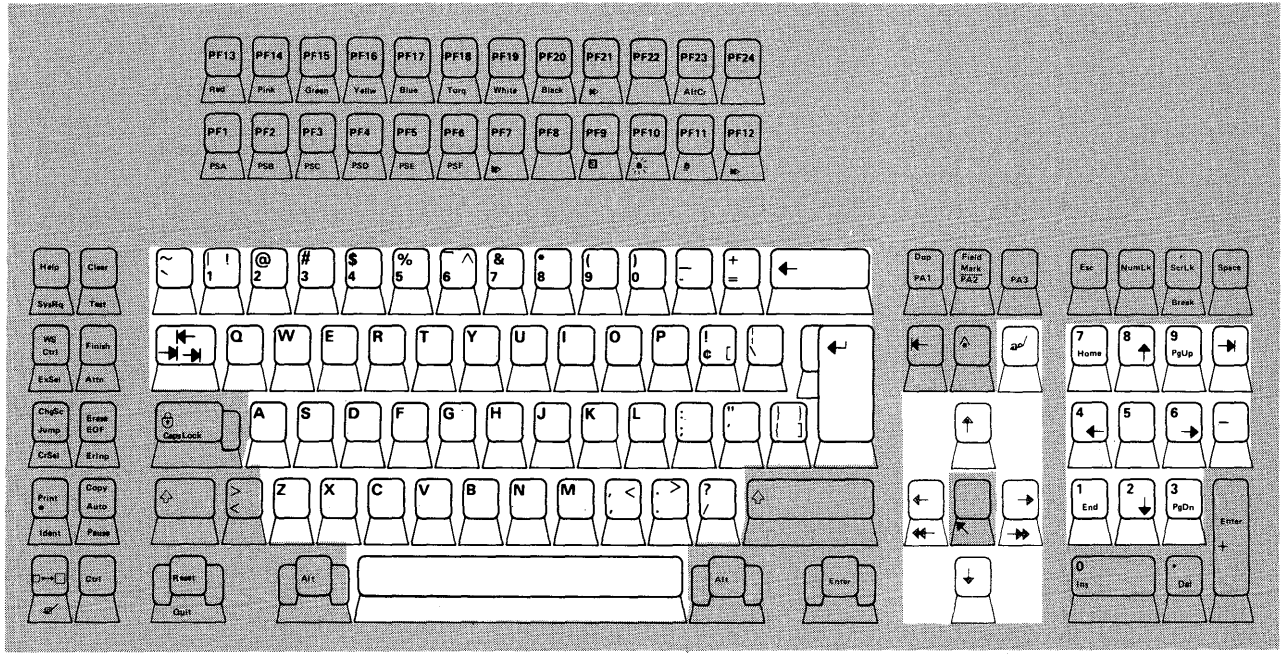
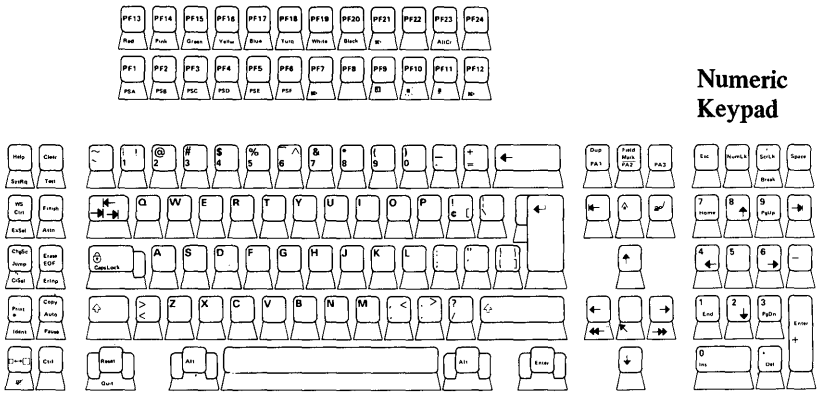


Figure 2. Typematic Keys under BASIC

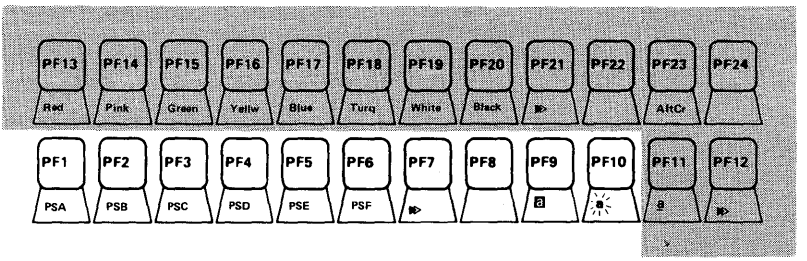
Keyboard Areas

The keyboard is divided into five areas:

- Program function keys
- Typewriter keyboard
- Left control keys
- Right control keys
- Numeric keypad



Program Function Keys



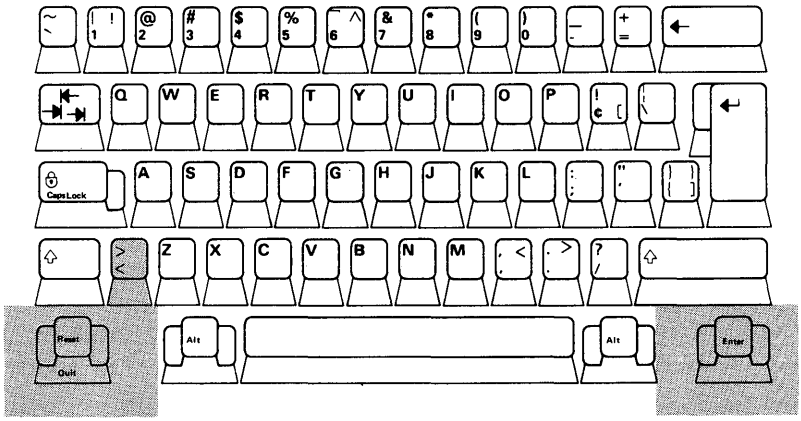
Note: Only keys PF1 through PF10 are active under IBM BASIC.

The program function (PF) keys are equivalent to the keys described in most personal computer manuals as **Function Keys**. Under IBM BASIC, PF1 through PF10 are valid and can be used:

- As **soft keys**. You can set each key to type any sequence of characters automatically. In fact, some frequently used commands have already been assigned to these keys. You may change these if you wish. Refer to "KEY Statement" in Chapter 4 of IBM Personal Computer *BASIC*.

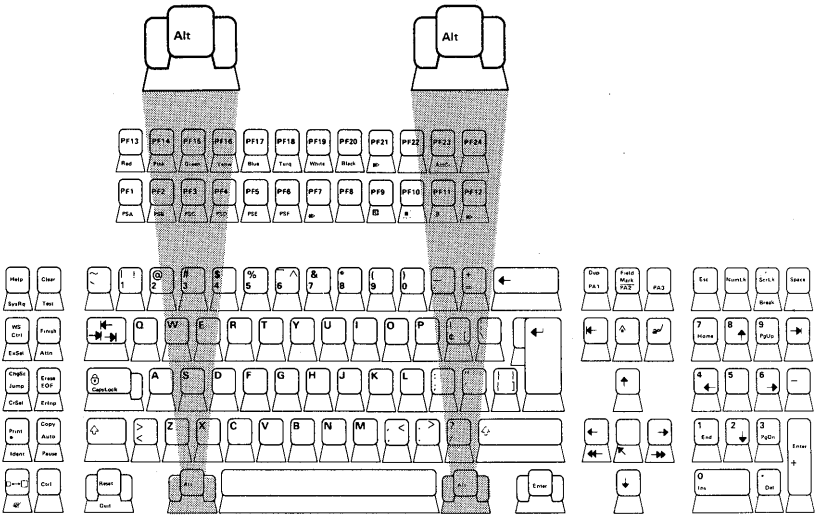
- As program interrupts in Advanced BASIC, through the use of the ON KEY statement. See "ON KEY(n) Statement" in Chapter 4 of IBM Personal Computer *BASIC*.

Typewriter Area



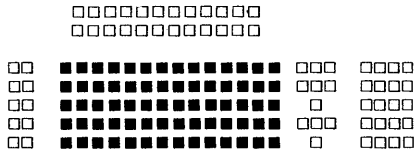
The typewriter area of the keyboard works like a standard typewriter. All the letters are in their usual places. The numbers 0 through 9 are in the top row, along with some special characters.

Alt Key



There are two Alt keys on your keyboard. Either Alt key enables easy entry of BASIC statement keywords. These keys allow you to type an entire BASIC keyword with a single keystroke.

The BASIC keyword is typed when the Alt key is held down while one of the alphabetic keys, A through Z, is pressed. Keywords associated with each letter are summarized on the next page. Letters not having reserved words are noted by **(no word)**.



Alt Keywords

A	AUTO	N	NEXT
B	BSAVE	O	OPEN
C	COLOR[1]	P	PRINT
D	DELETE	Q	(no word)
E	ELSE	R	RUN
F	FOR	S	SCREEN
G	GOTO	T	THEN
H	HEX$	U	USING
I	INPUT	V	VAL
J	(no word)	W	WIDTH
K	KEY	X	XOR
L	LOCATE	Y	(no word)
M	MOTOR	Z	(no word)

The Alt key is also used with the keys on the numeric keypad to enter characters not shown on the keys. This is done by holding down the Alt key and typing the 3-digit American National Standard Code for Information Interchange (ASCII) code for the character. See "Appendix G. ASCII Character Codes" in IBM Personal Computer *BASIC* for a complete listing of ASCII codes.

Note, however, that some of the ASCII codes have a special meaning to the BASIC program editor; the program editor uses its own interpretation for the codes and may not display the special characters.

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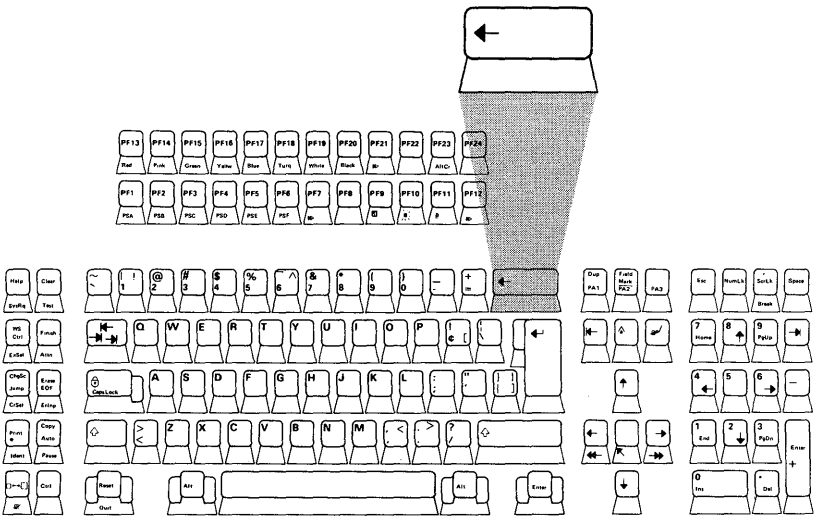
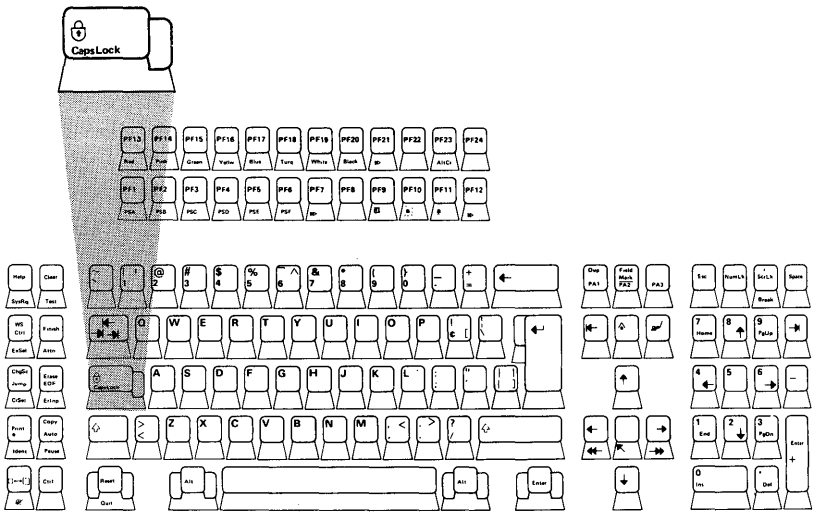
1 The IBM 3270 Personal Computer Color Display is an eight-color display.

Backspace



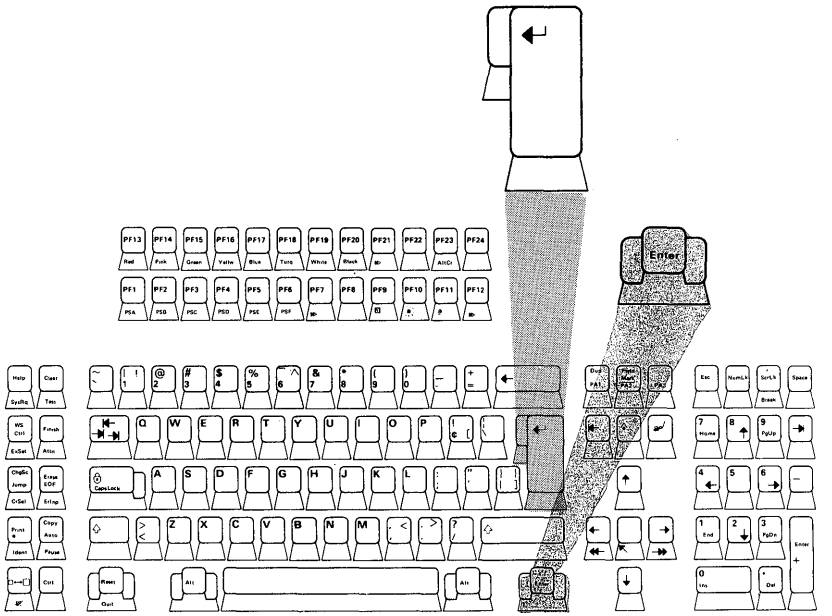
The Backspace key behaves somewhat differently from the Backspace key on a typewriter. It not only backspaces, but also erases what you have typed. Use the Cursor Left key to avoid erasing what you have typed. Refer to "The BASIC Program Editor," later in this book.

Caps Lock



The IBM 3270 Personal Computer keyboard does not have a standard Shift Lock key. The Caps Lock is similar to a Shift Lock key, but gives you only capital, or **uppercase** letters; it will not give you the uppershift characters on the numeric or other keys. After you press this key, you will continue to get uppercase letters until you press it again. You can get lowercase letters when you are in the Caps Lock state by pressing and holding one of the Shift keys. When you release the Shift key, you will go back to the Caps Lock state.

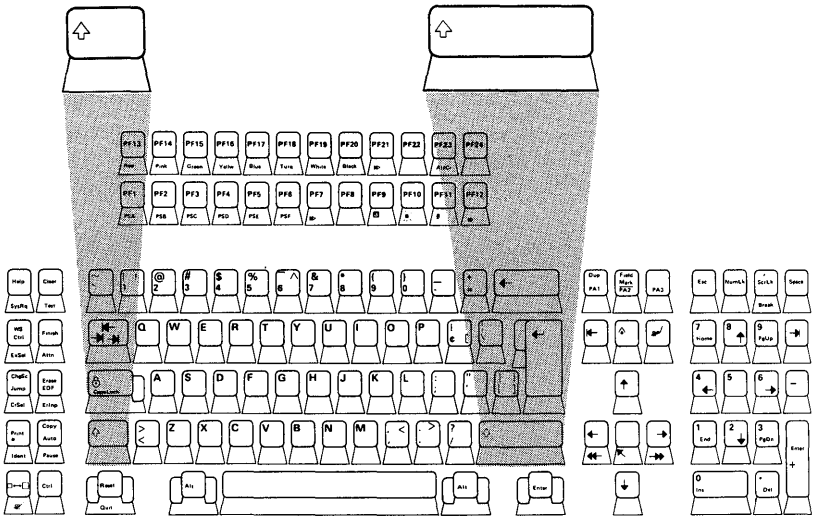
"Enter" Keys



The key with **Enter** and the key with the ↵ symbol are the enter keys for IBM BASIC and most personal computing applications. Press these keys to enter information into the IBM 3270 Personal Computer.

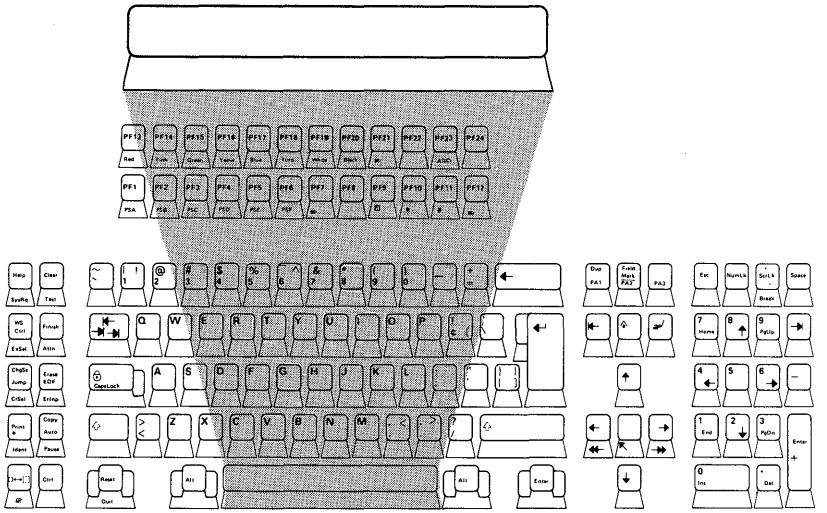
If you have the Serial Port and NMI button on the back of your system unit, the Enter key will be functional at all times.

Shift Keys



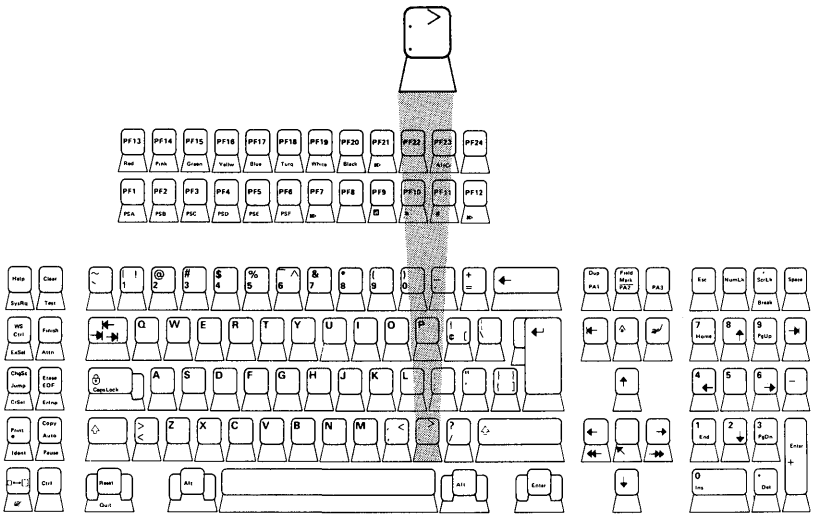
Uppercase letters and the special characters above the numbers on the numeric keys are displayed when either Shift key is held down and the desired key is pressed.

Spacebar



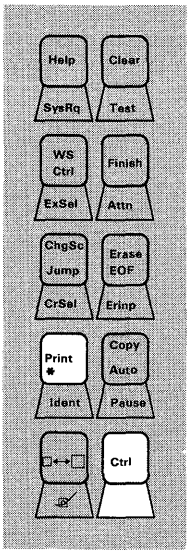
The spacebar moves the cursor to the right. Any character the cursor moves over is replaced with a space.

Special Symbols



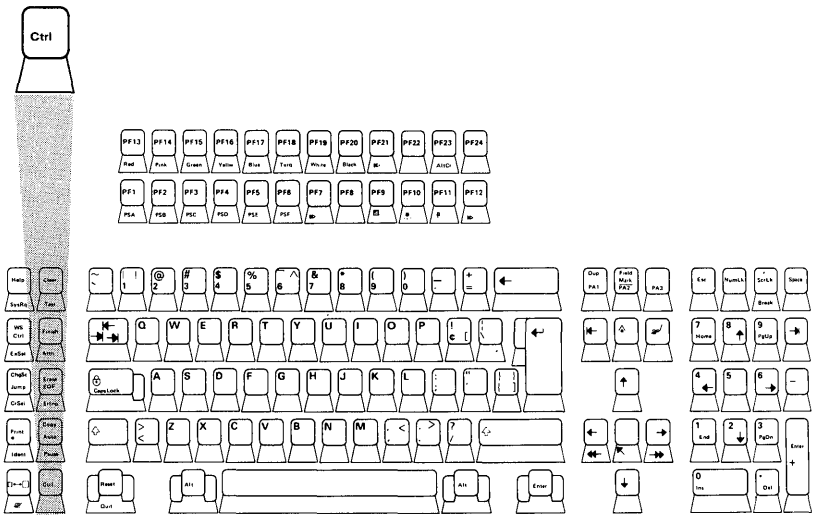
The keyboard has some special symbols you will not find on a typewriter, such as > , [, and]. Some characters are not where you might expect them to be if you are used to a typewriter. For example, the uppershift period (.) is not a period, but is the > symbol.

Left Control Keys



Two of the Left Control keys, Ctrl and Print, are functional for IBM BASIC applications.

Control Key



The Control (Ctrl) key is used to enter certain codes and characters not otherwise available from the keyboard.

For example, **Ctrl-G** is the bell character: When this character is printed, the speaker beeps. **Ctrl-G** means you press and hold the Ctrl key and then press the G key. You then release both keys.

You can also use the Ctrl key with other keys when you edit programs with the program editor.

For information on the function of the Ctrl key under other applications, consult the manual that came with that application.

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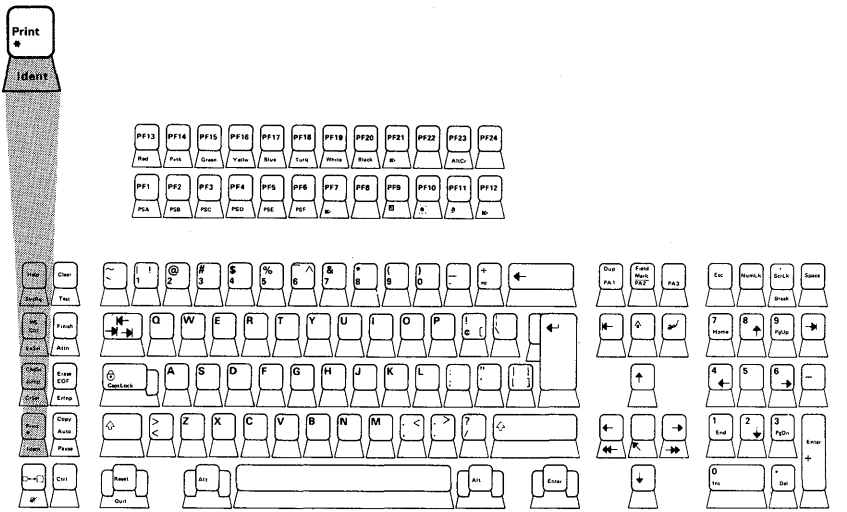
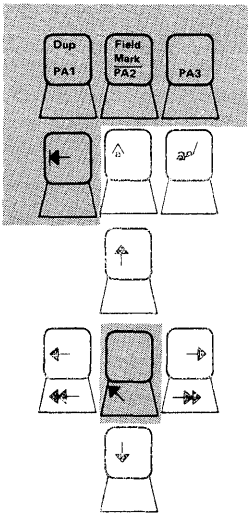
Print



When the keyboard is in lowershift, pressing the Print key causes an asterisk to be typed. In uppershift, however, this is a special key that causes a copy of what is on the screen to be printed on the printer (LPT1:). Characters that the printer cannot recognize are printed as blanks. So if you ever need a printed copy of what is currently being displayed, just press and hold one of the Shift keys, then press the Print key.

Right Control Keys



The keys in this area are functional only if you have the Serial Port and NMI button at the back of your system unit. (See the illustration on page 2 if you are not sure which system unit you have.) These keys work the same as their blue counterparts in the numeric keypad area. These keys allow you to move the cursor up, down, right, and left, and to insert and delete characters.

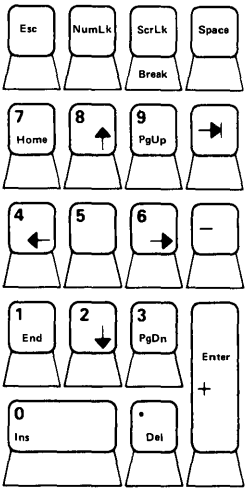
Right Control Keys (Continued)

This key functions the same as the DEL (delete) key in the numeric keypad.

This key functions the same as the INS (insert) key in the numeric keypad.

For more information on how these keys are used, refer to "The BASIC Program Editor," on page 28.

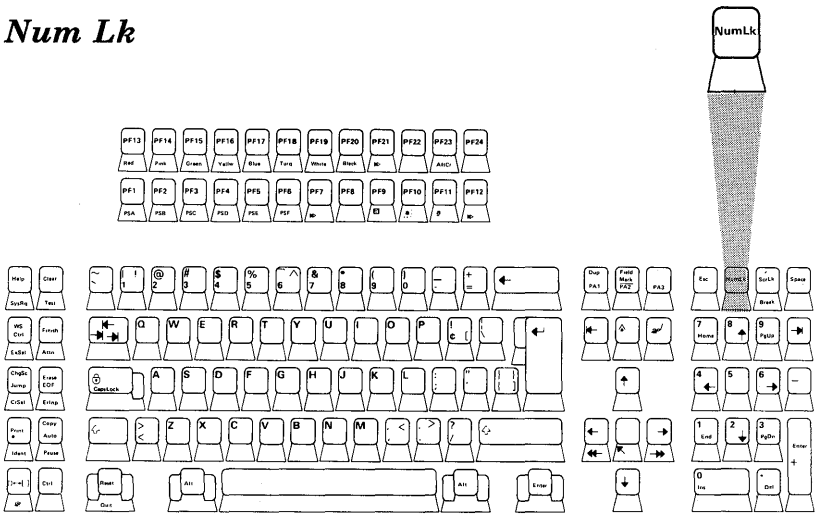
Numeric Keypad



You will usually use the numeric keypad keys for their functions with the program editor. These keys allow you to move the cursor up, down, right, and left, and to insert and delete characters. Refer to "The BASIC Program Editor," on page 28, for complete information.

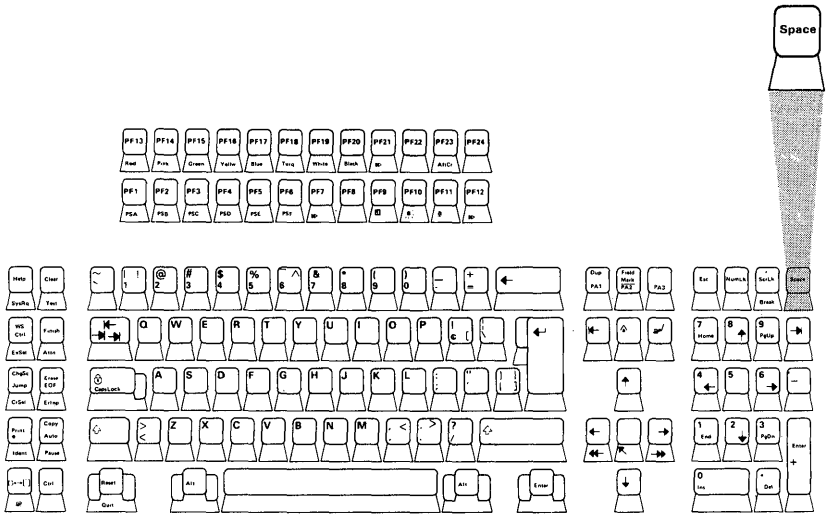
Note: The Scroll Lock, Pg Up, and Pg Dn keys are not used by BASIC, but may be given meaning within a program.

Num Lk



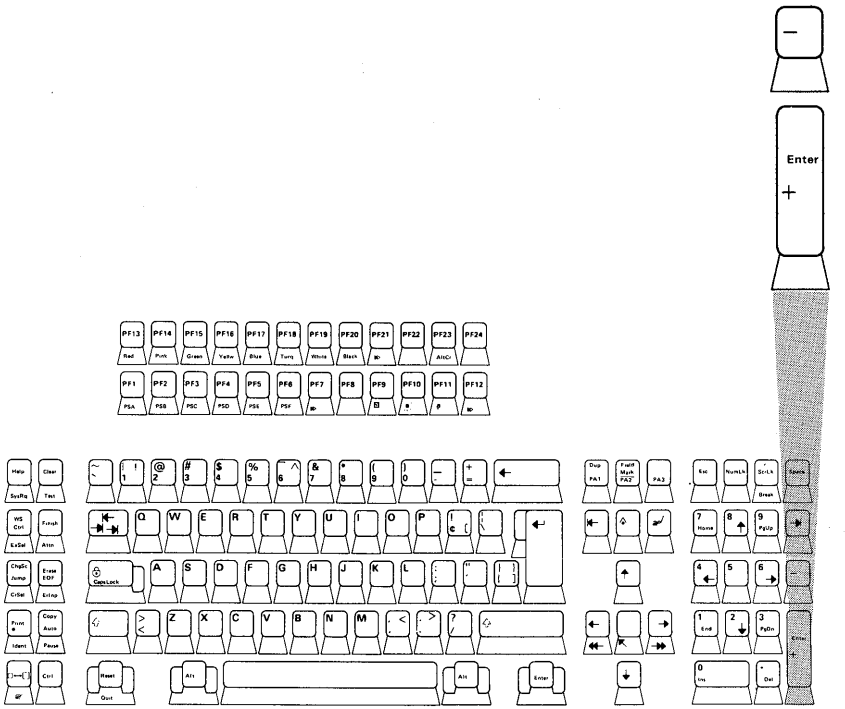
You can use the Num Lk key to set the numeric keypad so it works like a calculator keypad. Pressing the Num Lk key shifts the numeric keypad into its own uppershift mode, so that the numbers 0 through 9 and the decimal point, as indicated on the keytops, are functional. Pressing Num Lk again will return the keypad to its normal cursor control mode. As with Caps Lock, you can temporarily reverse the Num Lk state by pressing one of the Shift keys.

Space Key



The space key works just like the spacebar in the typewriter area of the keyboard.

Plus and Minus



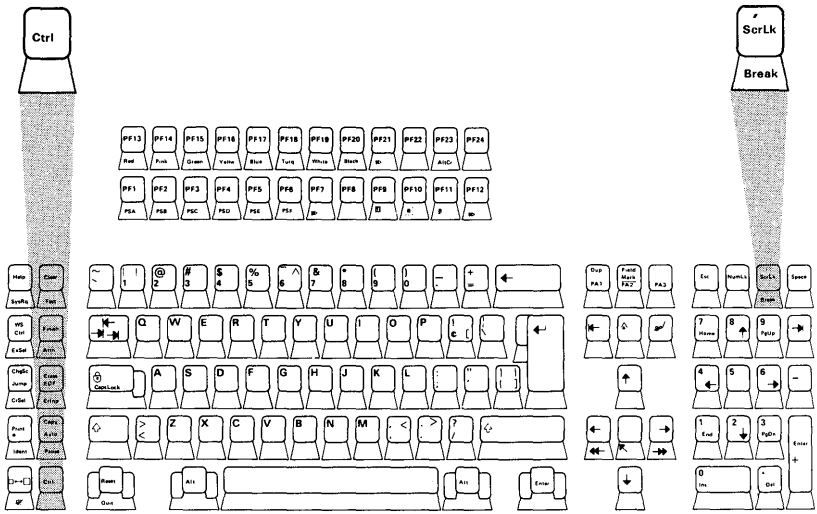
The plus key, when pressed, causes a plus (+) to be displayed.

The minus key, when pressed, causes a minus (-) to be displayed.

Special Key Combinations

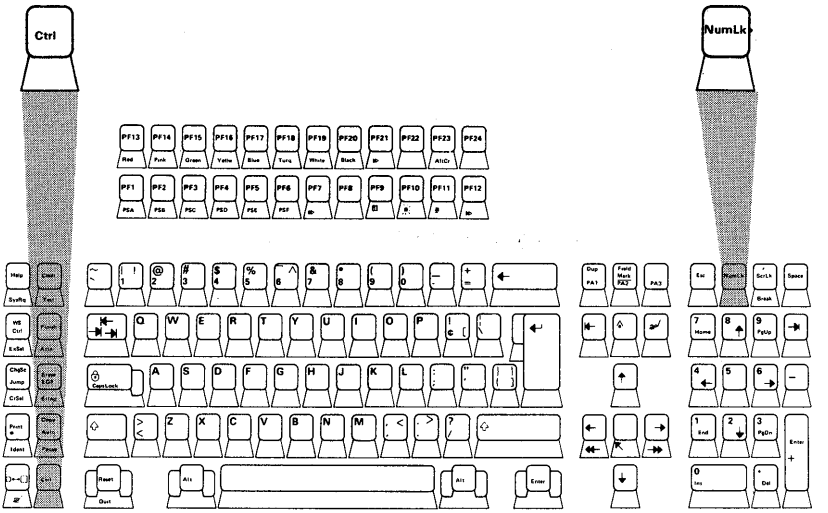
You should be aware of the special functions of the following combinations of keys.

Ctrl-Break



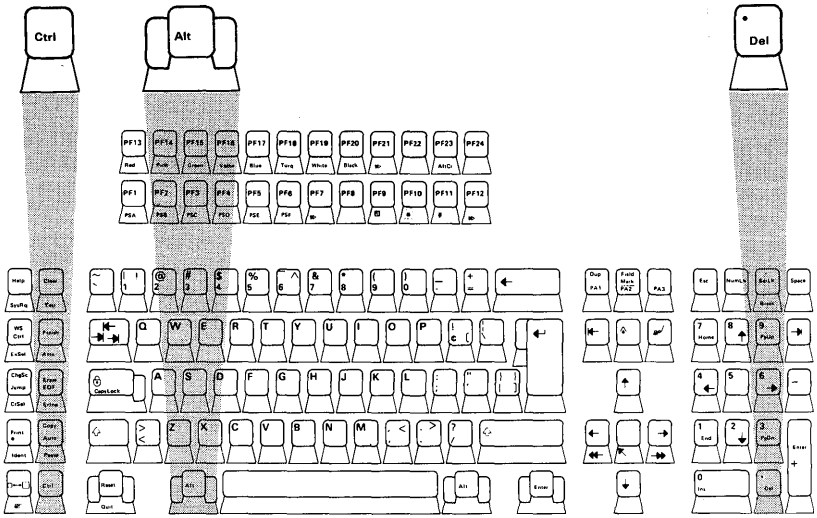
Ctrl-Break interrupts program execution at the next BASIC instruction and returns to BASIC command level. It is also used to exit AUTO line numbering mode.

Ctrl-Num Lk



Ctrl-Num Lk puts the computer into a **pause** state. This can be used to temporarily stop printing or program listing. The pause continues until you press any valid key under IBM BASIC, except Shift, Break, and Ins.

Ctrl-Alt-Del



If the computer power is on, Ctrl-Alt-Del performs a **system reset.** A system reset is similar to switching the computer from off to on. You must press and hold down the Ctrl and Alt keys (in either order), and then press the Del key. Then release all three keys. Resetting the system this way is preferable to switching the power off and on again because the system starts faster.

The BASIC Program Editor

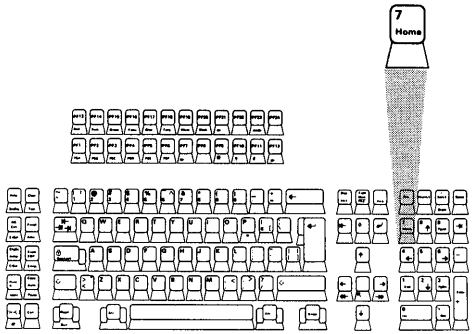
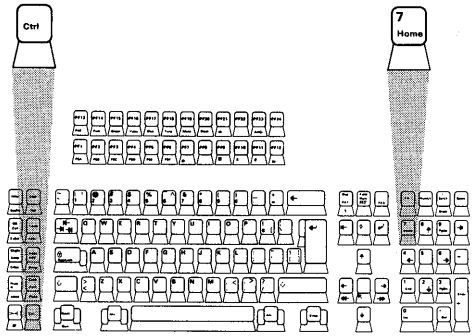
Any line of text typed while BASIC is at command level is processed by the BASIC program editor. The program editor is a **screen line editor**, which allows you to change a line anywhere on the screen one line at a time. The change will only take effect if you press Enter on that line.

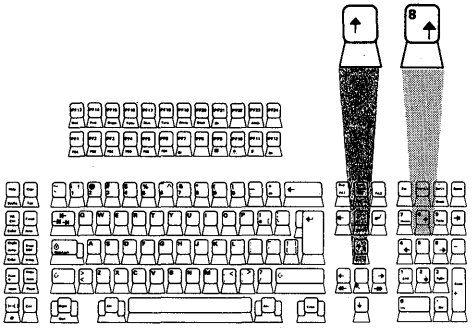
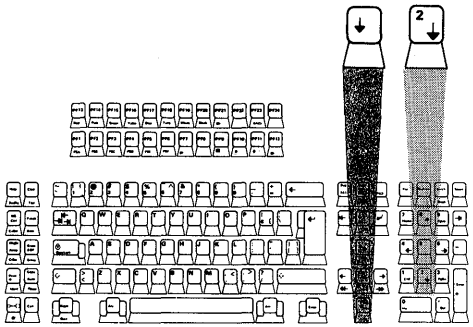
Use of the program editor can save a lot of time during program development. We suggest that, to become familiar with its features, you enter a sample program and practice all the editing capabilities. The best way for you to get a feel for the editing process is to try editing a few lines while studying the information that follows.

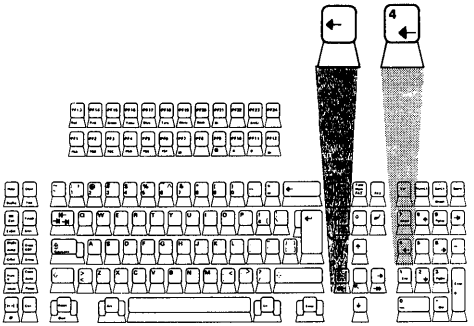
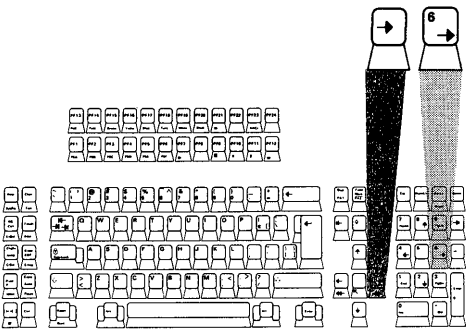
As you type, you will notice an underline or a box appearing on the screen to the right of the last character you typed. This line or box is called the **cursor**. It marks the next position at which a character is to be typed, inserted, or deleted.

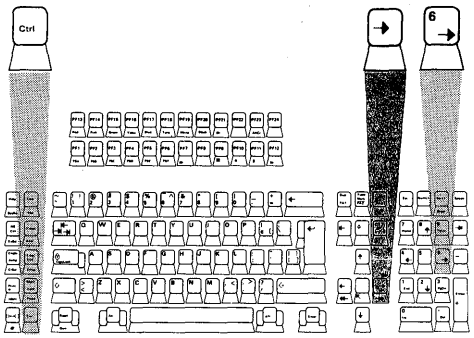
Special Program Editor Keys

You use the keys on the numeric keypad, the Backspace key, and the Ctrl key to move the cursor to a location on the screen, to insert characters, or to delete characters. These keys and their functions are listed on the following pages.

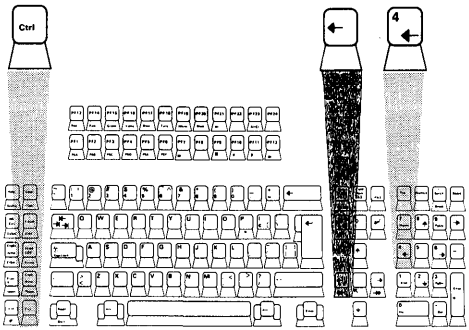
Key	Function
Home	 Moves the cursor to the upper left corner of the screen.
Ctrl-Home	 Clears the screen and positions the cursor in the upper left corner of the screen.

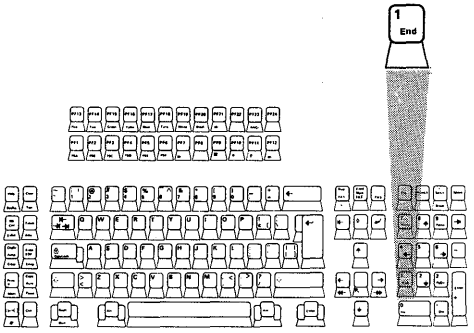
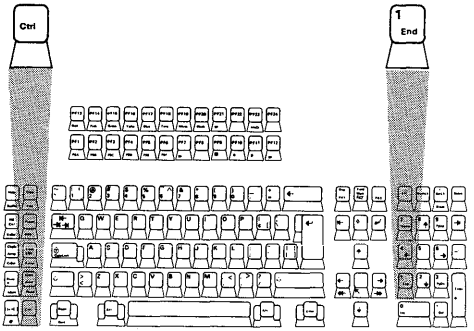
Key	Function
↑ (Cursor Up)	 Moves the cursor one position up.
↓ (Cursor Down)	 Moves the cursor one position down.

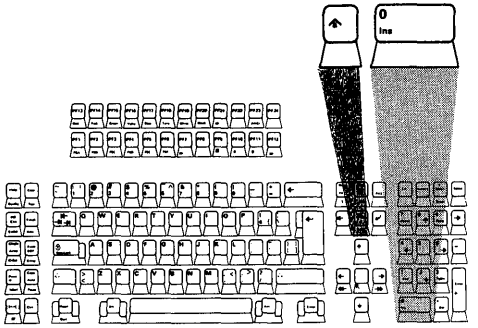
Key	Function
← (Cursor Left)	 Moves the cursor one position left. If the cursor advances beyond the left edge of the screen, it will move to the right side of the screen on the preceding line.
→ (Cursor Right)	 Moves the cursor one position right. If the cursor advances beyond the right edge of the screen, it will move to the left side of the screen on the next line down.

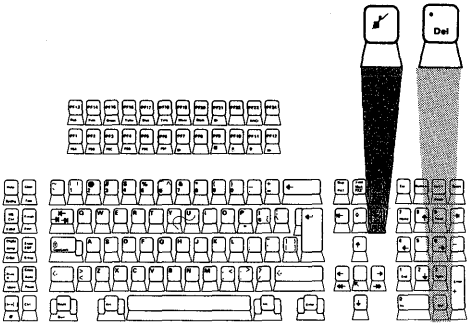
Key	Function
Ctrl-→ (Next Word)	 Moves the cursor right to the next **word.** A word is defined as a character or group of characters that begins with a letter or a number. Words are separated by blanks or special characters. The next word will be the next letter or number, to the right of the cursor, that follows a blank or special character. For example, suppose we have the following line: `LINE (L1,LOW2)-(MAX,48) ,3 , BF` As you can see, the cursor is in the middle of the word LOW2. If we press Next Word (Ctrl-Cursor Right), the cursor will move to the beginning of the next word, which is MAX: `LINE (L1,LOW2)-(MAX,48) ,3 , BF` If we press Next Word again, the cursor will move to the next word, which is the number 48: `LINE (L1,LOW2)-(MAX,48) ,3 , BF`

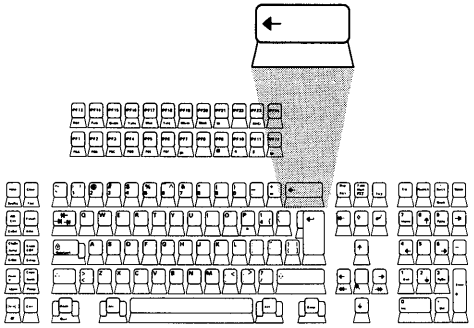
Key	Function

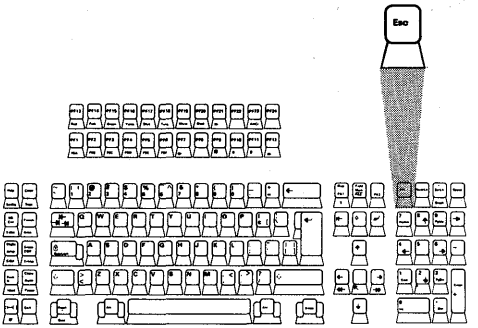
Ctrl-← (Previous Word)	
	Moves the cursor left to the previous word. The previous word will be the letter or number, to the left of the cursor, that is preceded by a blank or a special character.
	For example, suppose we have:
	`LINE (L1,LOW2)-(MAX,48) ,3 , BF_`
	If we press Previous Word (Ctrl-Cursor Left), the cursor moves to the beginning of the word BF:
	`LINE (L1,LOW2)-(MAX,48) ,3 , BF`
	When we press Previous Word again, the cursor moves to the previous word, which is the number 3:
	`LINE (L1,LOW2)-(MAX,48) ,3, BF`
	And if we press it twice more, the cursor will back up, first to the number 48, then to the word MAX:
	`LINE (L1,LOW2)-(MAX,48) ,3 , BF`

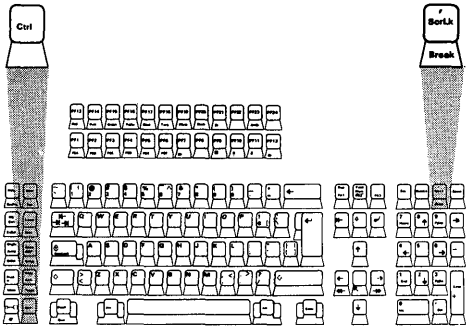
Key	Function
End	 Moves the cursor to the end of the logical line. Characters typed from this position are added to the end of the line.
Ctrl-End	 Erases to the end of the logical line from the current cursor position. All physical screen lines are erased until the terminating Enter is found.

Key	Function
Ins or	 Sets insert mode. If insert mode is off, pressing this key will turn it on. If insert mode is already on, you will turn it off when you press this key. When you are in insert mode, the character the cursor is on is displayed in reverse video. When insert mode is on, characters above and following the cursor move to the right as typed characters are inserted at the current cursor position. After each keystroke, the cursor moves one position to the right. **Line folding** occurs; as characters advance off the right side of the screen, they return on the left on a subsequent line. When insert mode is off, any characters typed replace existing characters on the line. Insert mode will be turned off when you press any of the valid cursor movement keys or the Enter key.

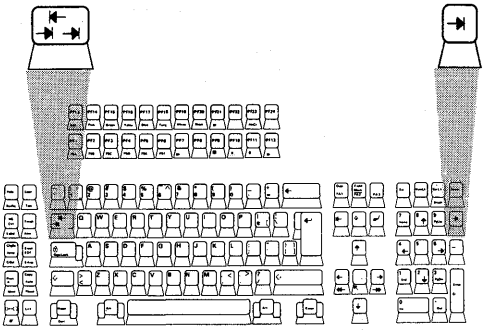
Key	Function
Del or	 Deletes the character at the current cursor position. All characters to the right of the deleted character move one position to the left to fill in the empty space. **Line folding** occurs; as characters advance off the right side of the screen, they return on the left on a subsequent line.

Key	Function
← (Backspace)	 Deletes the last character typed. All characters to the right of the deleted character move left one position to fill in the space. Subsequent characters and lines within the current logical line move up as with the Del key.

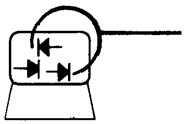
Key	Function
Esc	 When pressed anywhere in the line, Esc erases the entire logical line from the screen. The line is not passed to BASIC for processing. If it is a program line, it is not erased from the program in memory.

Key	Function
Ctrl-Break	 Returns to command level **without** saving any changes that were made to the current line being edited. It does not erase the line from the screen as Esc does.

Key	Function

→| (Tab)	
	Moves the cursor to the next tab stop. Tab stops occur every eight character positions at positions 1, 9, 17, etc.
	
	When insert mode is off, pressing the Tab key moves the cursor over characters until it reaches the next tab stop.
	
	For example, suppose we have the following line:
	
	`10 REM this is a remark`
	
	If we press the Tab key, the cursor will move to the 9th position as shown:
	
	`10 REM this is a remark`
	
	If we press the Tab key again, the cursor moves to the 17th position on the line:
	
	`10 REM this is a_remark`

Key	Function

→
(Tab)
(continued)
	When insert mode is on, pressing the Tab key inserts blanks from the current cursor position to the next tab stop. Line folding occurs as explained under **Ins.**
	
	For example, suppose we have this line:
	
	`10 REM this is a remark`
	
	If we press the Ins key and then the Tab key, blanks are inserted up to position 17:
	
	`10 REM th          is is a remark`
	
	 
	You will notice a Backtab symbol on the top of your Tab key. This is not functional under IBM BASIC, but may be functional under other applications.

For further information on using the BASIC Program Editor, see see "Chapter 2. Using BASIC" in the IBM Personal Computer *BASIC* manual.

Notes:

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