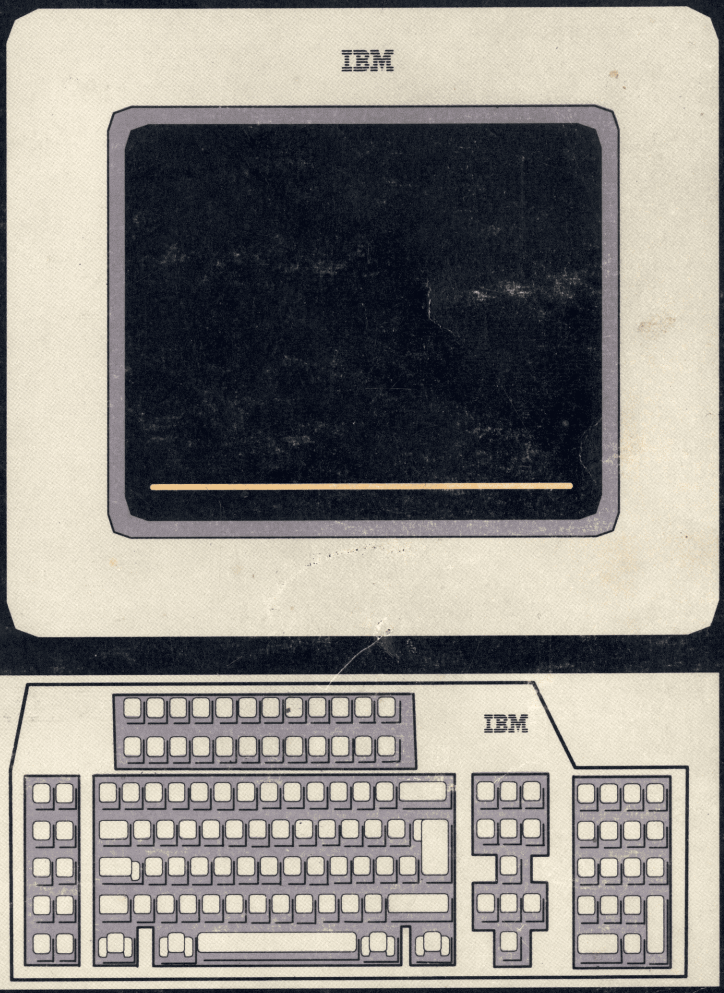
IBM 3290-2
Information Panel

Operator's Guide



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IBM®

3290-2 Information Panel

Operator's Guide

GA23-0242-1

Second Edition (July 1986)

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The purpose of this manual is to familiarize you with the operation of the IBM 3290-2 Information Panel. The manual provides introductory, reference, operational, and error-recovery information.

This manual is for the operator, or user, of the 3290-2.

Organization

This manual has five chapters and three appendixes:

- Chapter 1 is a description of the 3290-2 Information Panel.
- Chapter 2 contains information on adjusting the 3290-2.
- Chapter 3 contains information on powering-on the 3290-2.
- Chapter 4 describes the operational functions of the 3290-2.
- Chapter 5 describes the 3290-2 Entry Assist function.
- Appendix A is a reference guide to the 3290-2 indicators.
- Appendix B is a reference guide to the keyboard.
- Appendix C is a list of error messages.

A glossary and an index appear at the end of this manual.

Companion Publications

This publication is a guide to operating the 3290-2. For more detailed information, refer to:

- *IBM 3290-2 Information Panel Description and Reference*, GA23-0241.
- *IBM 3290-2 Information Panel Installation and Problem Determination Guide*, GA23-0324.
- *IBM 3270 Information Display System Data Stream Programmer's Reference*, GA23-0059.

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Chapter 1.

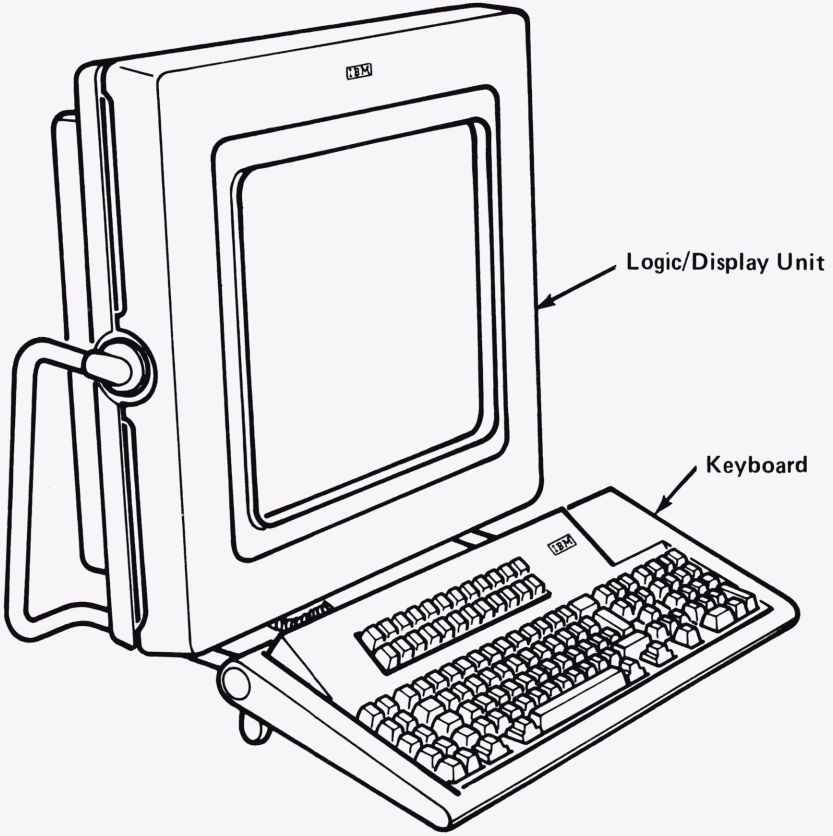
Introducing the 3290-2

The 3290-2 Information Panel is similar to other displays in the 3270 Information Display System, but there are some operational differences. The 3290-2 keyboard and methods of screen management are different from those of other 3270 displays.

For ease of use, the 3290-2 has these features:

- A plasma panel that adjusts for viewing comfort; a keyboard that adjusts for typing comfort
- A rule key, which allows you to display a line under a character row for easier reading
- A row and column indicator, which displays the current cursor location
- Varied methods of highlighting: underscoring, reverse video, and blinking
- A display space divisible into as many as four screens that can be viewed simultaneously
- The ability to act as up to four logical terminals, each having a separate sign-on
- The ability to make a screen an active screen (logical terminal) or a copy screen (reference area)
- A logical terminal identifier, which displays the name of the terminal in use (active or logical terminal)
- A zoom function, which can enlarge a portion of the active screen
- A response time monitor function, which measure that time interval between your input and the application program's reaction
- String and block copy functions, which operate within the same logical screen and from one logical screen to another
- A keyboard definition function, which allows for the rearrangement of the keys on the keyboard
- Entry assist functions, which aid in editing and creating documents.

The 3290-2 Information Panel has two main units: a logic/display unit and a keyboard. The 3290-2 is shown below.

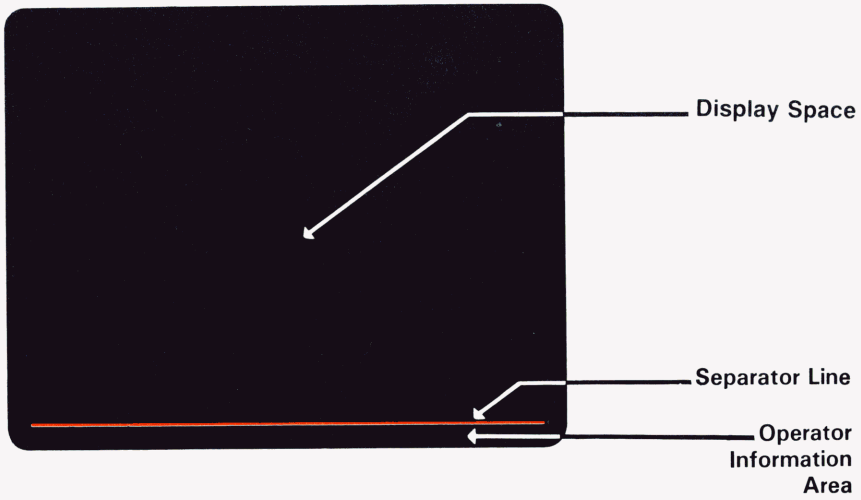


Logic/Display Unit

The logic/display unit of the 3290-2 Information Panel contains the power supply, logic and storage, and a plasma panel. The plasma panel (shown below) provides a large viewing area that displays orange picture elements (PELs), which form the characters, on a black background.

A horizontal line, called the *separator line,* divides the panel near the bottom. Above the separator line is the display space; below the separator line is the operator information area, which contains indicators and messages to help you determine the status of your 3290-2.

The display space of the 3290-2 can be divided vertically, horizontally, or into quarters, called *screen areas*.

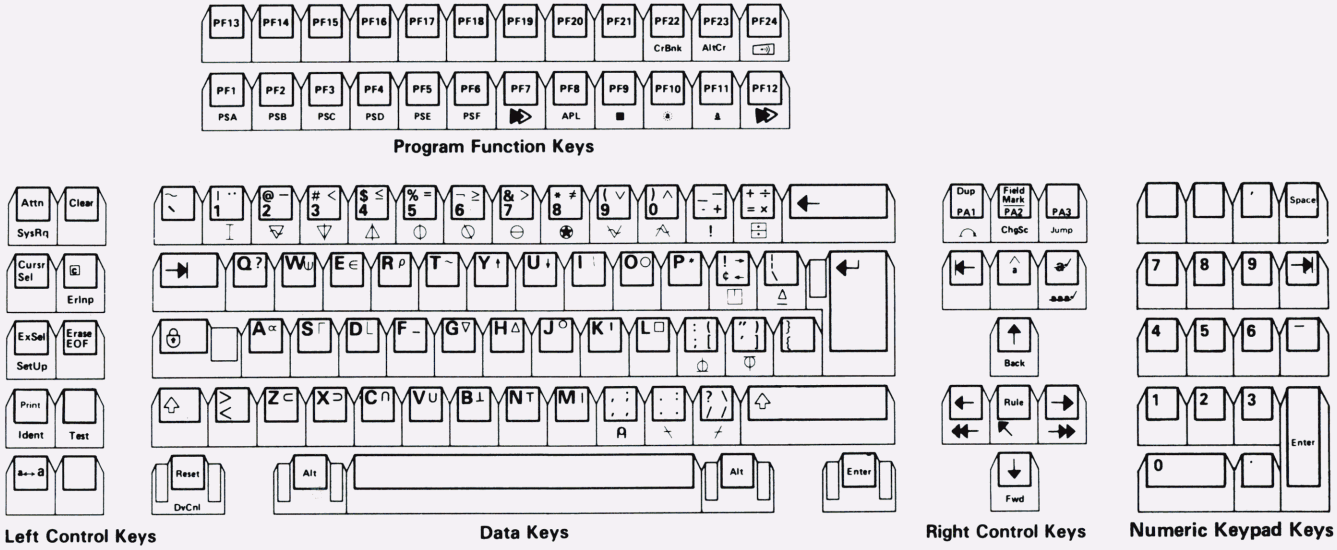


Keyboard

There are two keyboards available for the 3290-2, a standard typewriter keyboard with a numeric keypad and one without the keypad.

The following keyboard has five sections:

- Program function keys
- Left control keys
- Data keys
- Right control keys
- Numeric keypad keys



The keyboard layout shown is the standard IBM keyboard layout. The keys can be repositioned, so that you can choose a different layout to suit your needs. (See "Choosing a Different Keyboard Layout," in Chapter 4.)

The keys with labels on both the top and the front have two functions. The function labeled on the top of the key is performed by pressing that key alone. The function labeled on the front of the key, called an *alternate function,* is performed by pressing that key while holding down either Alternate (Alt) key.

Some keys have more than one symbol on the top. To display the symbol on the lower half, press that key alone. To display the symbol on the upper half, press that key with a shift key labeled ⇧ . There are two shift keys in this section, one on the right and one on the left. The shift keys are also used with the alphabetic keys to display uppercase letters.

The program function keys are laid out in two rows of twelve keys in each.

A keycap kit is available to convert the standard IBM keyboard layout to an APL-character layout.

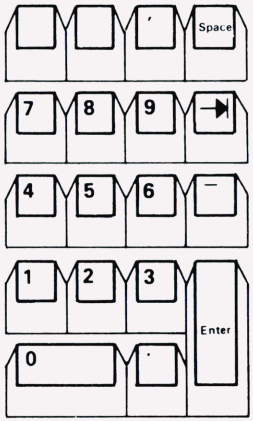
Note: Most of the keys are typematic: if a key is held down, the character or symbol is repeated.

The keys are described in Appendix B.

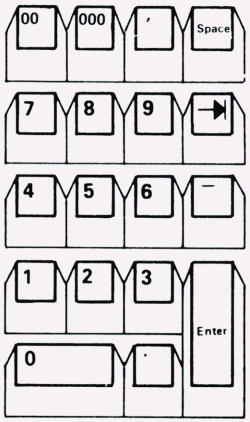
Keypad Types

The converged keyboard is supplied with a numeric keypad (U.S. and Canada). Other keycaps are available in kit form for customizing the keypad to one of the following:

- World Trade Keypads (Comma and decimal key positions can be swapped)
- Program Function Keypad (17 keys plus Enter key)
- Program Function Keypad (12 keys plus Enter key and blank keytops)

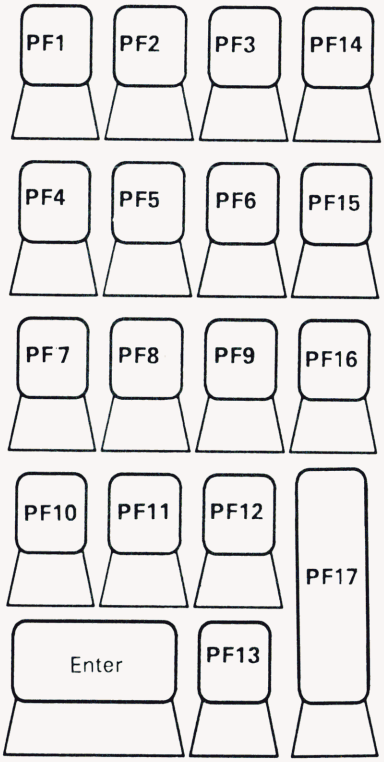


Numeric Keypad (U.S. and Canada)



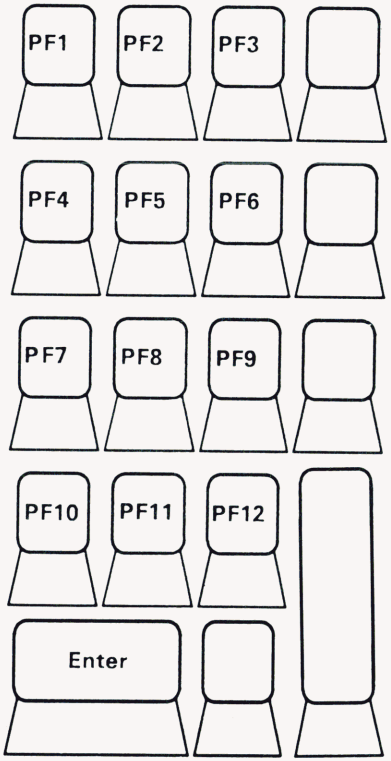
World Trade Numeric Keypads

Note: Other languages using World Trade keypads, may have the "," and "." positioned differently.



Program Function Keypad

(17-key layout)



Program Function Keypad

(12-key layout)

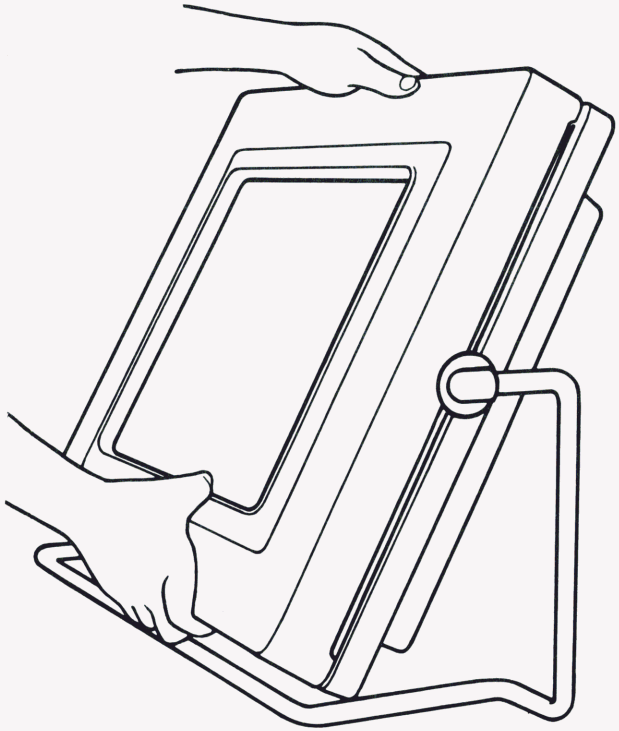
Chapter 2.

Adjusting Your 3290-2

One of the features of the 3290-2 Information Panel is its adjustability for your comfort. This chapter concerns itself with those controls that make adjustment for operating comfort possible.

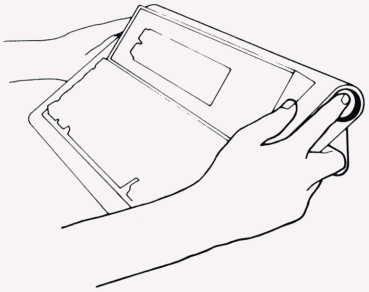
Panel Adjustment

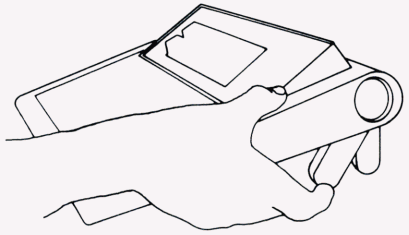
Tilt the panel forward or backward until you get the desired angle.



Keyboard Adjustment

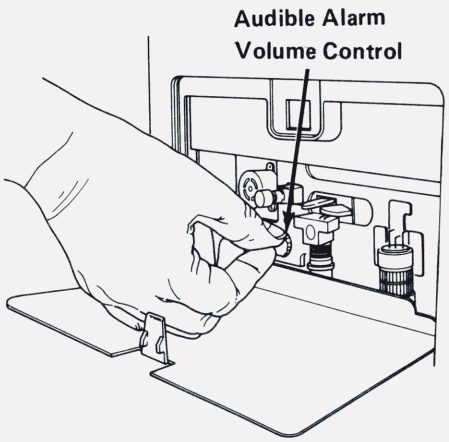
Your keyboard can lie flat or be adjusted to one of two angles for typing comfort. A pair of legs under the keyboard can be adjusted to one of two heights. To release the legs, press the pushbuttons on either side of the keyboard while lifting it slightly. Release the pushbuttons to lock the keyboard in the desired position.





Volume Controls

Audible Alarm Volume Control



The 3290-2 has an audible alarm. The alarm, under program control, sounds to alert you of a special condition. The audible alarm also sounds when you enter a character into the *next-to-last* position of an active partition.

You can adjust the audible alarm volume control as follows:

1. Open the access cover to locate the audible alarm volume control.
2. Using your thumb and forefinger to turn the control knob, do one of the following:

   - Turn the knob clockwise to increase the volume ( ).
   - Turn the knob counterclockwise to decrease the volume ( ).

3. Replace the access cover.

Clicker Control

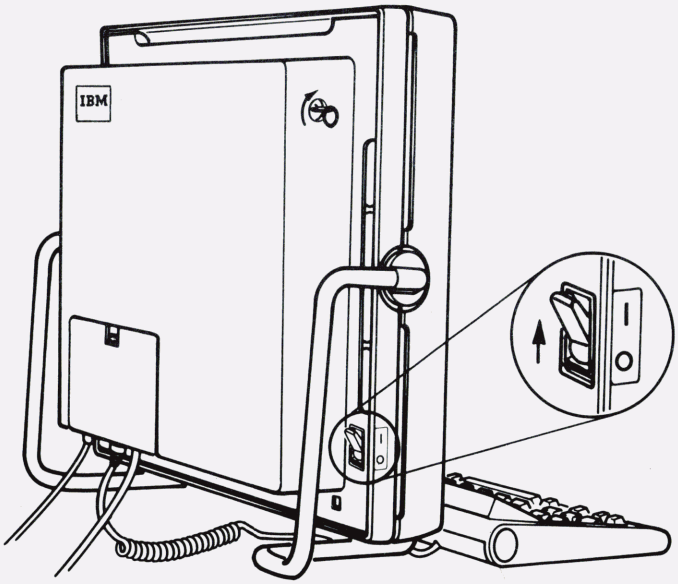
Your 3290-2 contains a clicker that will cause a clicking sound when you press a key. To turn on the clicker, press the key with the clicker symbol ( ) while holding down either Alt key. To turn off the clicker, press the clicker key again while holding down either Alt key.

Chapter 3.

Powering On Your 3290-2

On/Off Switch

The On/Off switch applies power to your 3290-2. Each time you lift the On/Off switch to the On (|) position, power is applied to the electrical circuits of your 3290-2 and the following sequence should occur.



1. Two broad horizontal traces momentarily appear at the top of the display space and descend vertically toward the bottom. This is a normal event and should not be considered a malfunction.
2. The separator line appears near the bottom of the display space.
3. A text sequence starts, and the test routine numbers appear in the operator information area.
4. At the end of tests, the operating code is loaded into the 3290-2 and a 4 (ready symbol) should appear in the operator information area. A 4 is used to indicate the ready symbol throughout this guide. However, the symbol on your terminal may be different.

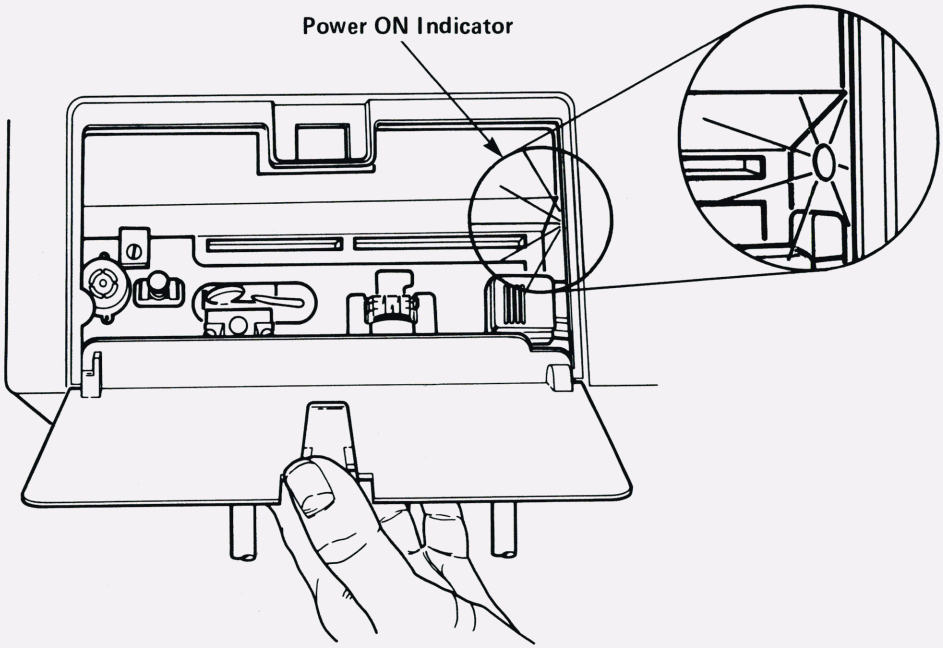
Note: In some cases, a <2> will appear in the operator information area when power is applied to the 3290-2. This indicates that your 3290-2 is in setup level 2. (See "Setup Mode" in Chapter 4.)

5. If 4 fails to appear within 2 minutes, see the *IBM 3290-2 Information Panel Installation and Problem Determination Guide,* GA23-0324.

On Indicator

The On indicator is located in the customer access area on the rear of the logic/display unit. To see the indicator light, you must open the access door and look into the indicator light port. When you lift the On/Off switch to the (|) position, the indicator should glow red. If the red light does not appear, power has not been applied to the electrical circuits.

If the indicator does not appear after you have powered on your 3290-2, there is a problem. Refer to *IBM 3290-2 Information Panel Installation and Problem Determination Guide,* GA23-0324.

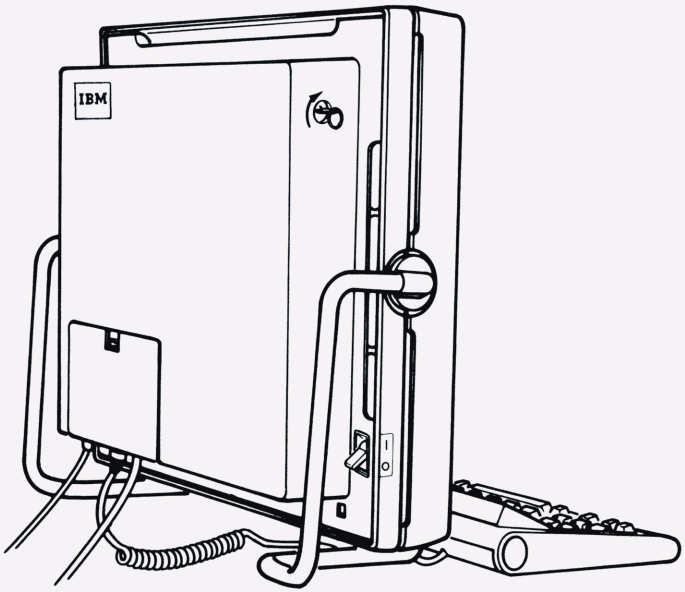


Security Keylock

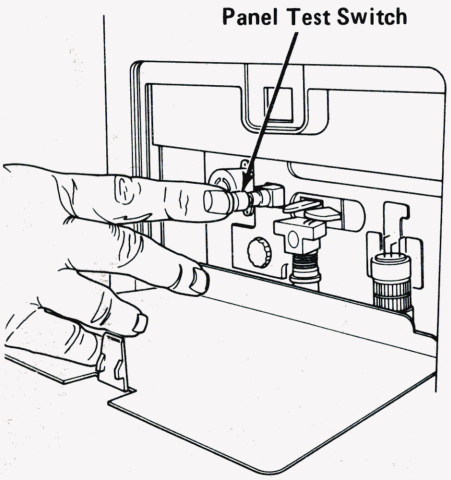
The security keylock allows you to prevent unauthorized personnel from using your 3290-2. Your 3290-2 cannot accept operator input until someone inserts the key and turns it clockwise (↷) 90 degrees.

If you turn the key counterclockwise, the screen is erased except for the operator information area. ✖🔑 appears in the operator information area, and data entry is inhibited. When the keylock is returned to the On position (fully clockwise), data appears on the screen and you are ready to resume operation.

Note: The key is removable while in the operating position.



Test Switch



Note: The **Test switch** should be used only when you have a problem with your 3290-2.

The Test switch produces a test pattern on your panel. This test pattern verifies the presence or absence of picture elements. Holding the switch down causes continuous test patterns.

CAUTION
If data exists on your panel and you press this switch, the data disappears and a test pattern replaces it. Data that you previously entered may be lost.

The Test switch is located in the customer access area. To press the Test switch, you must open the access door.

Normally, when you press this switch, the test pattern appears for approximately 20 seconds. The 3290-2 then proceeds as it does when powered on. If the test pattern remains on the panel longer than 20 seconds, press the On/Off switch off and then on again.

If you are having problems with malformed or distorted characters on your 3290-2, refer to *IBM 3290-2 Information Panel Installation and Determination Guide,* GA23-0324.

Chapter 4.

Operating Your 3290-2

This chapter introduces you to the operational capabilities of your 3290-2 Information Panel. Most of the capabilities discussed are those that are unique to the 3290-2. For a more detailed description of these capabilities, refer to the *IBM 3290-2 Information Panel Description and Reference,* GA23-0241.

The 3290-2 can have up to four logical terminals. A *logical terminal* is a simulation of a physical terminal. Each logical terminal can communicate with an application program. As many as four logical terminals can be viewed at the same time.

Only one logical terminal at a time can be active. The *active logical terminal* is the one that contains the cursor and communicates with the operator. You can choose the number of logical terminals, the screen division, and other characteristics of the 3290-2.

The 3290-2 operational characteristics depend on the default configuration specified for your 3290-2. A *default setting* is defined as the characteristics in effect when the 3290-2 is powered on. These settings can be changed in *setup mode.* Setup mode is the mode of operation in which you can modify some of the 3290-2's original settings to other allowable settings.

All modifications made in setup levels 1 and 2 to the 3290-2's original settings are temporary; they last only until the 3290-2 is switched off or its control unit is reloaded. Permanent changes can be made in Setup Level 3, if the password is used.

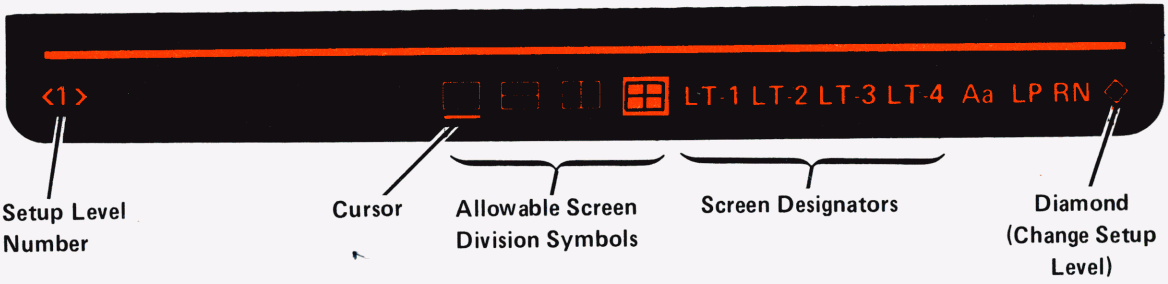
Setup Mode

Note: For ease of discussion, this guide assumes that your 3290-2 remains with the IBM-supplied default settings and that you have four logical terminals.

Setup mode has three levels:

- Setup level 1: In this level, you can change the screen divisions on the display space of your 3290-2, change the way you use screens, and change other defined parameters.
- Setup level 2: In this level, you can choose one of the logical terminal sets displayed in the operator information area. A *logical terminal set* is a definition of the characteristics of a group of logical terminals, including the screen divisions and the number of logical terminals.
- Setup level 3: In this level, you can modify the default settings of the 3290-2. This guide does not include setup level 3. For a detailed description of setup level 3, refer to the *IBM 3290-2 Information Panel Description and Reference,* GA23-0241.

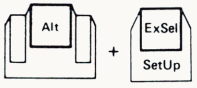
To enter setup mode, press the Setup key while holding down either Alt key. You are now in setup level 1, and the default settings appear at the bottom of your display space in the operator information area:



Note: The above is an example of what might be displayed. The screen designators displayed in setup level 1 depend on the logical terminal set selected in setup level 2 (and on the number of logical terminals allowed).

Entering Setup Level 1

Action	Result
Press	



The Left (←) and Right (→) Cursor Move keys are used to move the cursor while in the operator information area. The Left Cursor Move key will get you to the last position within the operator information area.

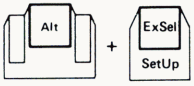
After you have made any changes, you must exit setup level 1 to move the cursor out of the operator information area. Before you can exit setup level 1, the following must exist and be verified:

- At least one logical screen must be displayed.
- The same logical screen cannot be displayed in more than one screen area.

Note: You can exit setup level 1 and enter setup level 2 by moving the cursor under the diamond ◇ and pressing the **Cursr Sel** Key.

Exiting Setup Level 1

Action	Result
Press	



In setup level 2, the operator information area displays logical terminal sets you may choose. The logical terminal sets are labeled A, B, C, D, E, and F. Each label is followed by a number that represents the number of logical terminals you can use when you choose that set. Logical terminal A is the default setting when the 3290-2 is powered on. The logical terminal set you choose in setup level 2 determines the screen division you are allowed to choose in setup level 1.

In setup level 2, the operator information area contains:

Note: The above is an example of what might be displayed.

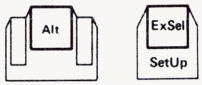
Entering Setup Level 2 (via Setup Level 1)

In setup level 1:

Action	Result
Move cursor under	
Press	

After you have selected a logical terminal set, it appears in reverse video in the operator information area. You must exit setup level 2 to move the cursor out of the operator information area.

Exiting Setup Level 2

Action	Result
Press 	

Selecting Logical Terminal Sets

If you wish to choose a new logical terminal set, you can do so in setup level 2.

The example of selected set **A** 4 appears in reverse video in the operator information area. To choose a different set, move the cursor under the desired set and press the **Cursr Sel** key. The new set now appears in reverse video. The associated characters of the new set are in effect when you exit setup level 2.

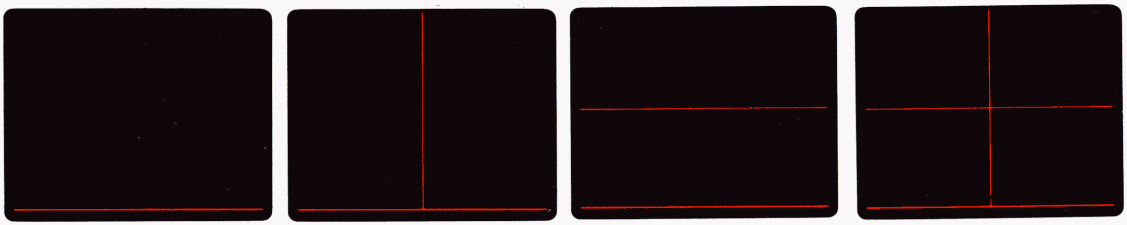
In setup level 2:

Action	Result
Move cursor under B 3	
Press	

Exit setup level 2 by pressing the **Setup** key while holding down either Alt key.

Dividing the Display Space

You can choose a screen division from the options displayed in the operator information area in setup level 1. Using the example of logical terminal set A, you can select any one of four allowable screen divisions:

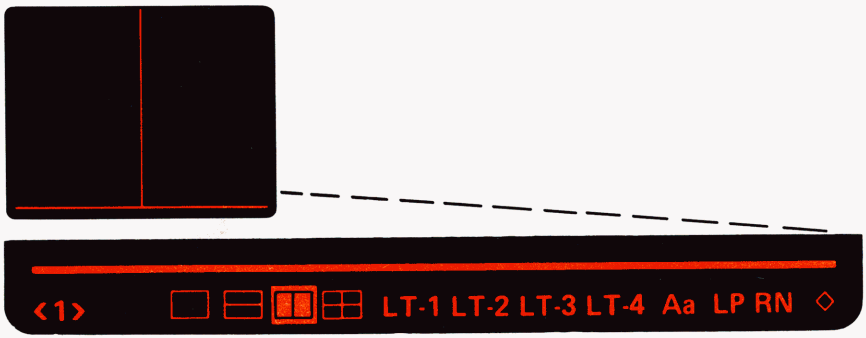


The other logical terminal sets may show different screen divisions.

In setup level 1, with **A4** selected, you can divide the screen vertically, horizontally, or into quarters.

Dividing the Screen Vertically

In setup level 1:

Action	**Result**
Move cursor under	
Press	

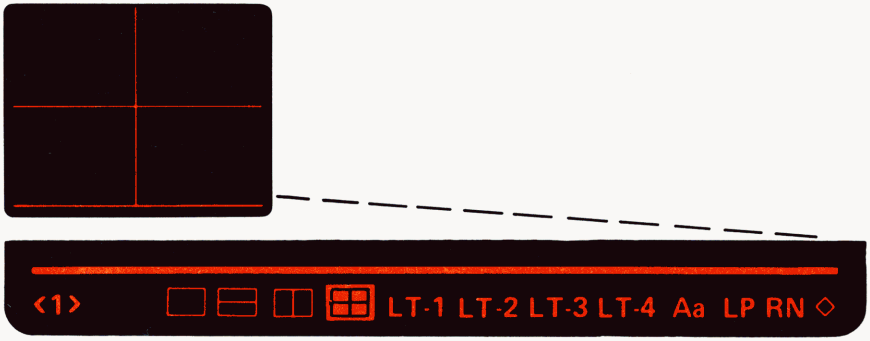
Dividing the Screen Horizontally

In setup level 1:

Action	Result
Move cursor under	
Press	

Dividing the Screen into Quarters

In setup level 1:

Action	Result
Move cursor under	
Press	

The symbol for the screen division currently in effect appears in reverse video in the operator information area. Exit setup level 1 by pressing the **Setup** key while holding down either Alt key.

Logical Terminals

Identifying Logical Terminals

The 3290-2 can have up to four logical terminals. Only one of these logical terminals can be active at a time. The *active logical terminal* is the one that contains the cursor. The *logical terminal identifier* in the operator information area indicates which of your terminals is the active one. The logical terminal identifier of the active logical terminal appears to the left of the row/column indicator in the operator information area.

Logical Screens and Copy Screens

A screen area in which a logical terminal is displayed is called a *logical screen*. If you have more screen areas than you have logical terminals, the extra screen areas can be used as *copy screens*. A copy screen is a reference area. You cannot communicate with the application program with copy screens; you can only copy data to a copy screen or clear a copy screen of data that you have previously copied there.

You can choose to use a screen area as a copy screen (rather than as a logical screen) in setup level 1.

Changing Screen Areas to Copy Screens

Each screen area, starting at the top left and proceeding clockwise, is represented by a designator. The designator representing each screen appears in the operator information area from left to right. The designator can be one of three kinds: a blank space (the screen is used as a logical screen but is not named), a logical terminal identifier (the screen is used as a logical screen and the identifier has up to four characters), or the symbol ⊡→⊡ (the screen is used as a copy screen).

To define a screen area as a copy screen, enter setup level 1 and position the cursor under the designator that represents it in the operator information area. Press the **Cursr Sel** key until the copy screen symbol (⊡→⊡) appears.

In setup level 1:

Action	**Result**
Move cursor under LT-1	
Press Cursr Sel until (⊡→⊡) appears.	<1> LT-2 LT-3 LT-4 Aa LP RN ◇

Exit setup level 1 by pressing the **Setup** key while holding down either Alt key.

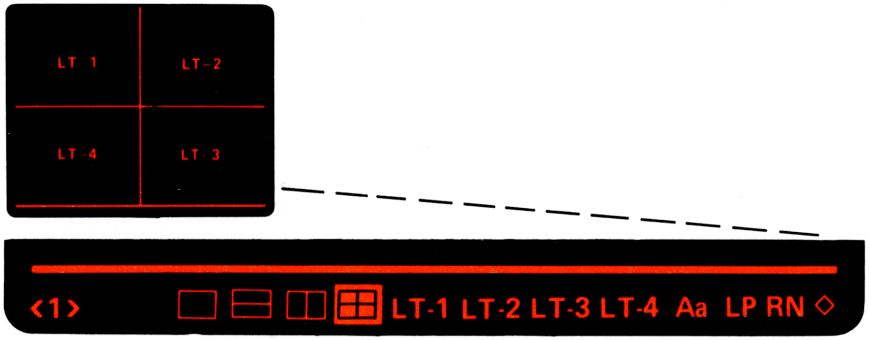
When you exit setup level 1, the screens designated as copy screens appear blank in the display space.

Screens designated as copy screens can be changed back to logical screens by the same procedure.

You must always leave at least one logical screen displayed, and no two logical screens may have the same identifier. If one logical screen is not displayed, or if two logical screens have the same identifier, the error is highlighted in reverse video in the operator information area and you cannot exit setup level 1 until it is corrected.

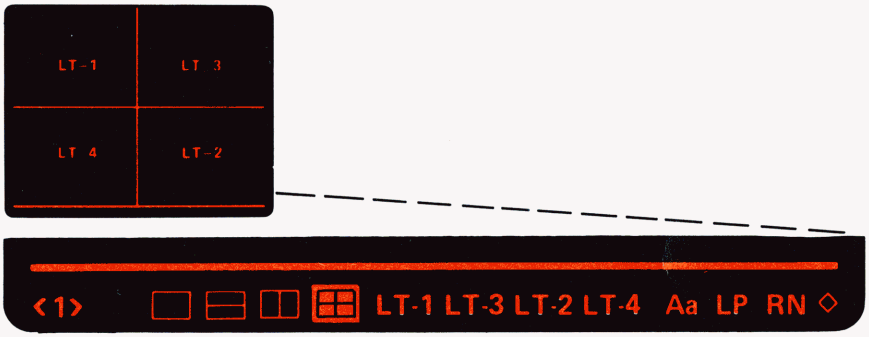
Changing the Position of Logical Screens

If you use logical terminal set A, the logical terminal identifiers for the four logical terminals are named clockwise from the top left screen as:



You can change the position of the logical terminals in setup level 1.

In setup level 1:

Action	Result
Move cursor under LT-2 Press Cursr Sel until LT-3 appears. Move cursor under LT-3 Press Cursr Sel until LT-2 appears.	

Exit setup level 1 by pressing the **Setup** key while holding down either Alt key.

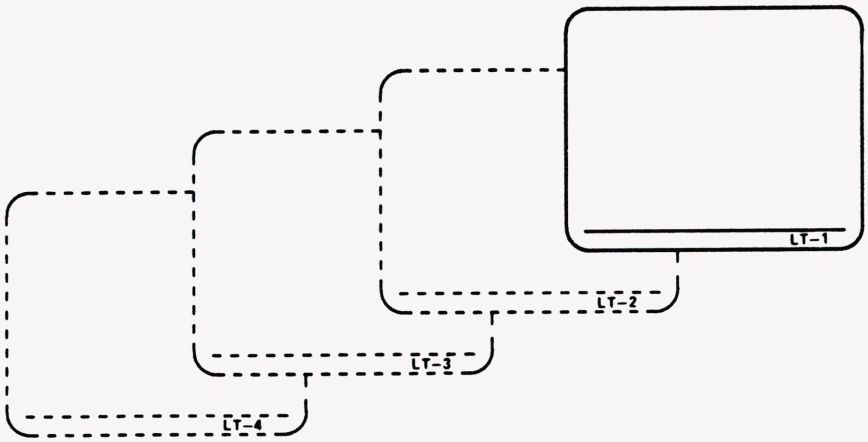
You must not leave any two logical terminals with the same identifiers, or else the error will be highlighted in reverse video in the operator information area and you will not be able to exit setup level 1 until it is corrected.

Placing Logical Screens in the Background

If your logical terminal set allows for more than one logical terminal, you can choose to display or not to display a logical terminal.

The logical terminals that are not displayed are placed in the background queue as background screens. A *background screen* is a screen that is not displayed but with which the application program can communicate.

In the example below, **LT-1** is the active logical terminal and the other logical terminals are in the background queue.

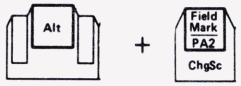
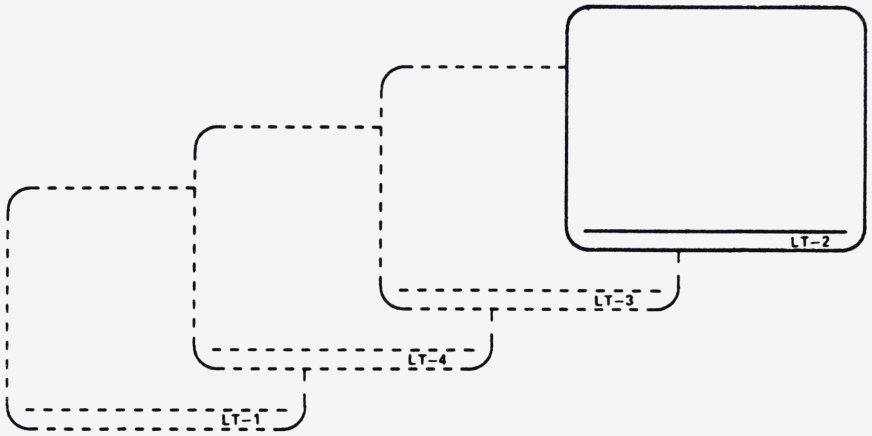


To display a screen from the background queue, press the Change Screen **(Chg Sc)** key while holding down either Alt key.

The logical terminal at the top of the background queue becomes the active logical terminal, the logical terminal identifier changes to correspond with it, and the screen that was active is placed at the back of the background queue.

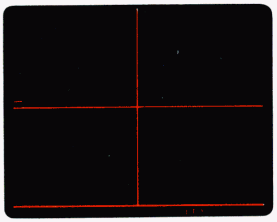
The Change Screen key is effective only when you have more than one logical terminal and you have at least one in the background.

For example, to display **LT-2** and put **LT-1** in the background:

Action	**Result**
Press 	

Moving the Cursor to Other Logical Screens

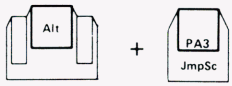
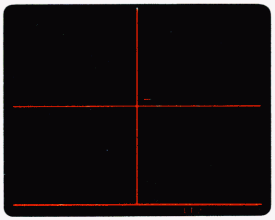
When you have more than one logical screen displayed, you can choose the active logical screen by using the **Jump** key.



The Jump key is effective only when you have more than one logical screen displayed.

If your display space is divided into four screens, the cursor appears in the active logical terminal.

When you press the **Jump** key while holding down either Alt key, the cursor moves clockwise to the next logical screen, making it the active screen.

Action	**Result**
Press 	

Selecting Mono- or Dual-Case Characters

In setup level 1, the operator information area displays the symbol **Aa** for dual-case characters when the 3290-2 is powered on. If you want to display characters in uppercase, move the cursor under the **Aa** and press the **Cursr Sel** key. The symbol **AA** replaces the **Aa**, and the lowercase characters in the display space switch to uppercase.

In setup level 1:

Action	Result
Move cursor under **Aa**	
Press	
For example:	**The clock struck 12...**
becomes	**THE CLOCK STRUCK 12...**

Exit setup level 1 by pressing the **Setup** key while holding down either Alt key.

Local Copy of Viewport or Presentation Space

If you are using scrollable partitions, you can choose to print the entire presentation space (**LP**) or its viewport (**LV**), a predefined part of the presentation space. For information on presentation space and viewport, refer to the *IBM 3270 Information Display System: Data Stream Programmer's Reference,* GA23-0059.

In setup level 1, your operator information area displays the symbol **LP** (presentation space) as the power-on default. If you want to print the viewport, move the cursor under the symbol **LP** (presentation space) and press the **Cursr Sel** key. The symbol **LV** replaces the symbol **LP**. Now, when you decide to print your data, you will get only the viewport.

In setup level 1:

Action	Result
Move cursor under **LP**	
Press	

Exit setup level 1 by pressing the **Setup** key while holding down either Alt key.

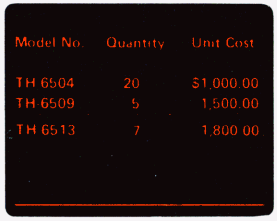
The Rule Line

The rule key can display a single horizontal line under one row of characters within the active logical screen (or active partition). When the **Rule** key is pressed, the rule line is displayed across the full width of the screen (or partition) to help you relate widely separated data in the same row.

When the 3290-2 is powered on, the rule line is not displayed. The rule line is erased whenever a logical screen is erased.

To display the rule line, press the **Rule** key.

Displaying the Rule Line

Action	Result
Press	

You can choose to have the displayed rule line follow the cursor or remain in place.

In setup level 1, the operator information area displays the symbol **RN** (Rule-line-does-Not-follow-the-cursor) when the 3290-2 is powered on. If you want the rule line to follow the cursor, move the cursor under the symbol **RN** in the operator information area and press the **Cursr Sel** key. The symbol **RC** (Rule-line-follows-the-Cursor) replaces the **RN**.

Changing the Status of the Rule Line

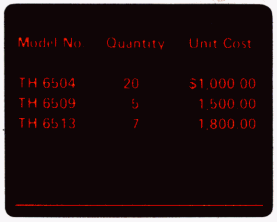
In setup level 1:

Action	Result
Move the cursor under **RN**	
Press	

Exit setup level 1 by pressing the **Setup** key while holding down either Alt key.

To erase the rule line, press the **Rule** key.

Erasing the Rule Line

Action	Result
Press	

Copy Screen Mode

Copy screen mode is the mode of operation in which you can choose to copy the contents of your active logical screen onto a copy screen or print it.

Press the **Print** key, on the left-hand side of your keyboard, to enter copy screen mode.

In copy screen mode, the operator information area contains symbols for choosing the destination of the data. The symbol on the left side of the operator information area ( ) indicates that you are in copy screen mode. The next symbol is the print symbol ( ). You can print a hard copy of your active logical screen by moving the cursor under the symbol and pressing the **Cursr Sel** key.

The other symbols in the operator information area in copy screen mode appear as one of the following:

	designates a screen used as a COPY screen
	designates a screen used as a LOGICAL screen

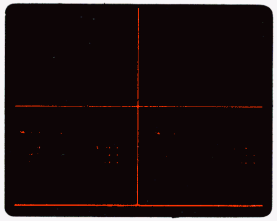
The order in which they appear in the operator information area corresponds to the screen area they represent, starting at the top left of the panel and going clockwise.

Entering Copy Screen Mode

Action	Result
Press Print Ident	

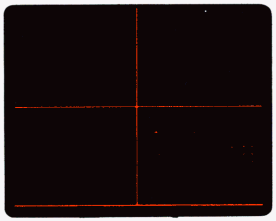
Copying Data to a Copy Screen

In copy screen mode:

Action	Result
Move cursor under Press Cursr Sel	The contents of LT-4 are copied onto a copy screen. 

Clearing a Copy Screen

In copy screen mode:

Action	Result
Move cursor under Press Clear	The copy screen containing the contents of LT-4 is cleared. 

Sending Data to a Printer

In copy screen mode with LT-4 active:

Action	Result
Move cursor under Press	The contents of LT-4 are sent to the printer.

The operator information area is rewritten, and the print operation is initiated.

Exiting Copy Screen Mode

When you exit copy screen mode, the copy screen indicator is removed, the associated symbols disappear from the operator information area, and the cursor returns to the current cursor position on the active logical screen.

Action	Result
Press	

Enlarging the Size of Your Characters

You can enlarge the size of the characters in your display space by pressing the **Zoom** key (⌘a) to enter the zoom function. The results of this action depend on whether your display space is divided or undivided.

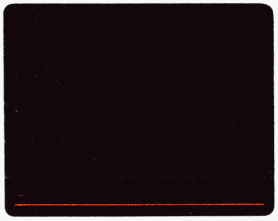
If the displayed information is already in the largest allowable character size with optimum spacing between characters when you enter the zoom function, the 3290-2 enters the zoom function, but the displayed information does not change size.

Entering the Zoom Function When Your Display Space Is Divided

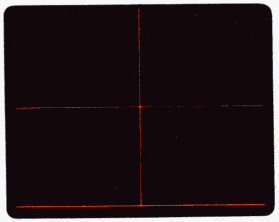
When your display space is divided, entering the zoom function erases all screens except the active logical screen. Information in the active logical screen is displayed in the largest character size with optimum spacing between characters.

When you exit the zoom function, logical screens that were erased are restored. Copy screens that were erased are not restored.

To enter the zoom function, press the **Zoom** key (a↔a). If your display space is divided into four screen areas:

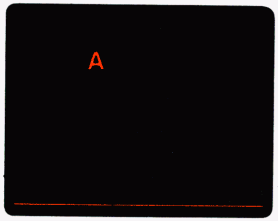
Action	Result
Press	

To exit the zoom function, press the **Zoom** key (a↔a) again. If your display space was divided into four screen areas before you entered the zoom function:

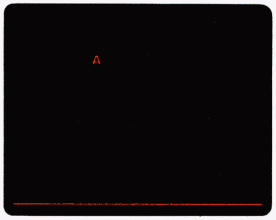
Action	Result
Press	

Entering the Zoom Function When Your Display Space Is Undivided

When your display screen is undivided, entering the zoom function causes the data on the active logical screen to be displayed in the largest allowable character size with optimum spacing between characters.

Action	Result
Press	

To exit the zoom function, press the **Zoom** key (a↔a) again. If your display space was undivided before you entered the zoom function:

Action	Result
Press	

Extending the Capabilities of Your Program Function Keys

Extended select mode expands the capabilities of your 3290-2 by redefining some of your program function (**PF**) keys. When you enter extended select mode, PF13-19 are redefined as follows:

PF Key	Definition
PF13	Document mode
PF14	Wordwrap mode
PF15	Change format mode
PF16	String copy function
PF17	Block copy function
PF18	Response time monitor
PF19	Intensify options

To enter extended select mode, press the **ExSel** key. See an example on the following page. The symbol ▸ appears in the operator information area to indicate that your active logical terminal is in extended select mode. The active logical terminal remains in extended select mode until you press the **ExSel** key again, which allows you to exit from this mode. While the active logical terminal is in extended select mode, all program function keys except PF13–19 are ignored.

Entering Extended Select Mode

Action	Result
Press ExSel SetUp	

Exiting Extended Select Mode

To exit extended select mode, press the **ExSel** key again.

Action	Result
With ▶ displayed Press ExSel SetUp	

Copying a String of Data

The string copy function copies a string of data from one area of the display space to another. You can copy data between logical terminals or within a logical terminal. To copy a string of data, you must select the area to which you want data copied (the target area), select the string of data you want to copy (the source area), and perform a copy operation.

First, select your target area by moving the cursor to the position where you want to copy data. Press the **String Copy** key (PF16 in extended select mode). appears in the operator information area and a rectangle appears at the cursor position to signify the beginning of the target area.

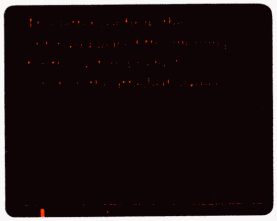
Next, select the string of data you want to copy. Move the cursor either to the beginning or to the end of the string, and press the **Cursr Sel** key. A rectangle appears at this position. Now move the cursor to the other end of the string, and press the **Cursr Sel** key. A rectangle appears around the character in that position, and the source area is underscored.

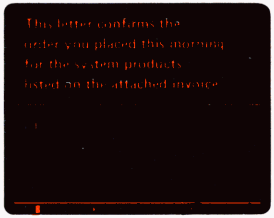
To perform a copy operation, press the **Enter** key. The data is copied to the target area and overlays the data that was in that area. Copying continues until all the source data is copied, until the data is cut short because the target area is too small, or until an error occurs. When the string copy operation is completed, the 3290-2 returns to the state that existed before you selected the string copy function and the cursor is in the space after the last character copied.

To exit the string copy function before performing a copy, press the Device Cancel (**DvCnl**) key while holding down either Alt key.

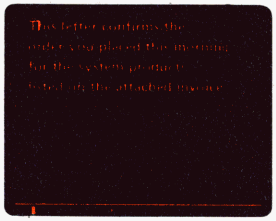
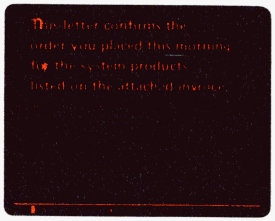
Selecting a String Copy Target Area

The picture below shows a screen on which a string copy will be performed.

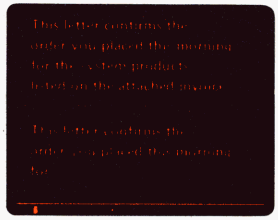


Action	Result
With ▶ displayed, place the cursor at the beginning of the target area.	
Press PF16	

Selecting a String Copy Source Area

Action	Result
Place the cursor at one end of the source area. Press	
Place the cursor at the other end of the source area. Press	

Performing a String Copy

Action	Result
Press	

Copying a Block of Data

The block copy function copies a rectangular area of data from one area of the display space to another. You can copy data between logical terminals or within a logical terminal. To copy a block of data, you must select the area to which you want data copied (the target area), select the block of data you want to copy (the source area), and perform a copy operation.

First, select your target area by moving the cursor to the position where you want to copy data. Press the **Block Copy** key (PF17 in extended select mode). appears in the operation information area, and a rectangle appears at the cursor position to signify the beginning of the target area.

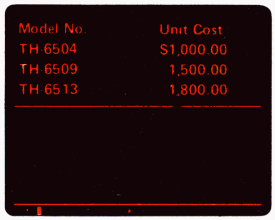
Next, select the block of data you want to copy. Move the cursor to one corner of the block, and press the **Cursr Sel** key. A rectangle appears at this position. Now move the cursor to the diagonally opposite corner of the block, and press the **Cursr Sel** key again. A rectangle appears around the character in that position, and the source area is underscored.

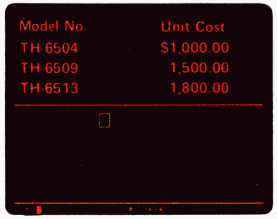
To perform a copy operation, press the **Enter** key. The data is copied to the target area and overlays the data that was in that area. Copying continues until all the data is copied, until the data is cut short because the target area is too small, or until an error occurs. When a block copy operation is completed, the 3290-2 returns to the state that existed before you performed the block copy function and the cursor is positioned after the last character copied.

To exit the block copy function before performing a copy, press the Device Cancel (**DvCnl**) key while holding down either Alt key.

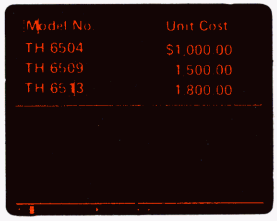
Selecting a Block Copy Target Area

The picture below shows a screen on which a block copy will be performed.

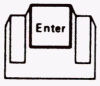
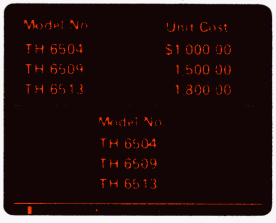


Action	Result
With ▶ displayed, place the cursor at the beginning of the target area. Press PF17	

Selecting a Block Copy Source Area

Action	Result
Place the cursor at one end of the source area. Press	
Place the cursor at the other end of the source area. Press	

Performing a Block Copy

Action	Result
Press 	

Monitoring the Response Time of Your 3290-2

The response time monitor is a function that measures the performance of each logical terminal by timing the interval between the operator's initial communication with the application program and the application program's reply.

To display response time, press PF18 in extended select mode. Refer to the *IBM 3290-2 Information Panel Description and Reference,* GA23-0241, for a complete description of the response time monitor.

The Intensify Options Key

You can display intensified fields in one of three ways (NO HIGHLIGHT, REVERSE VIDEO, or UNDERLINE). Press the ExSel key with the PF19 (Intensify Options) key. You will get one of the following:

- No Highlight
- Reverse Video
- Underline

By pressing PF19 again, you get the next option; press it once more, you get the last option. Pressing it again brings you back to the first option. The order of these options may differ depending on the customization of your 3290-2.

You can have a particular intensify option in one partition and switch to an entirely different intensify option in another partition.

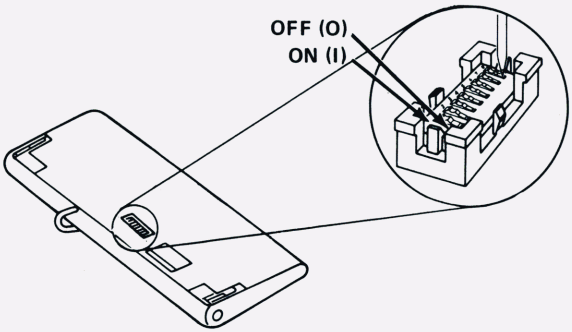
Choosing a Different Keyboard Layout

The keyboard definition function allows for the rearrangement of keys on your 3290-2 keyboard. For a detailed description of this function, refer to the *IBM 3290-2 Information Panel Description and Reference,* GA23-0241.

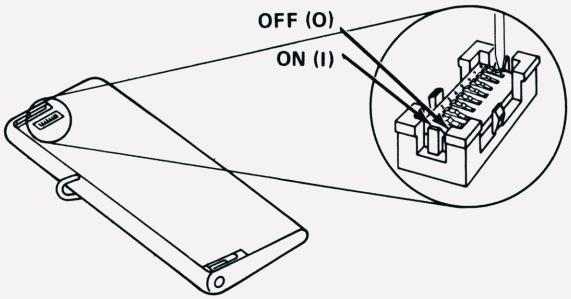
When this function is used, up to three different keyboard layouts in addition to the standard layout can be defined. The standard layout is the originally defined IBM layout and does not change. The three additional layouts that you can use are created by rearranging characters and functions on the original layout. Each defined layout has an ID assigned to it.

The layouts are selected by the keyboard ID switches located underneath your keyboard.

To locate the ID switches, lift up the keyboard unit front edge and roll the unit over so that the keyboard faces the work surface. The ID switches are numbered 1 through 8 starting left to right.



Keyboard without Keypad



Keyboard with Keypad

To select the redefined keyboard layout you want to use, change the positions of the keyboard ID switches numbered 1 and 2 only to reflect the ID switch settings. To change each switch setting, use a ball point pen to set each switch rocker in either the **O** or **I** position. Do not change any of the other switches.

ID switches 3 and 4 identify the type of keypad currently used on the keyboard. These switches must be set to indicate the type of keypad you intend to use.

If you change the keyboard ID switches, the keyboard layout will change the next time you do one of the following:

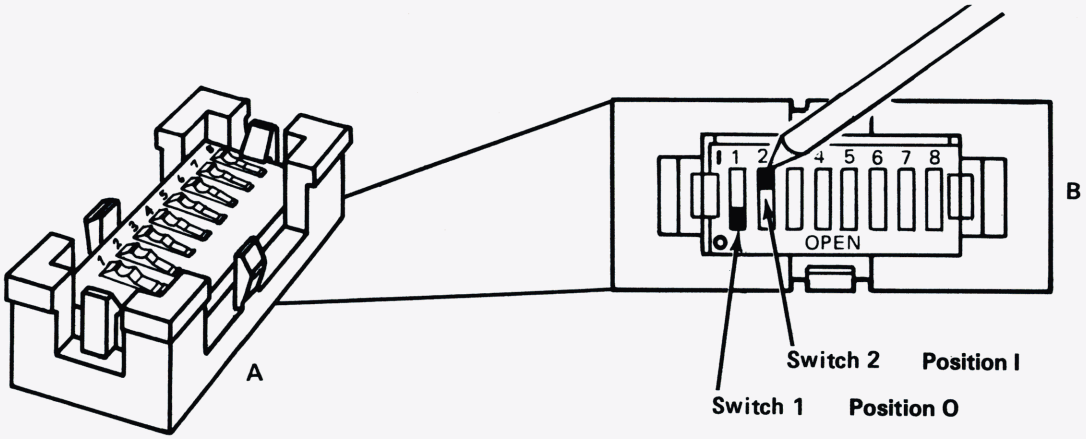
- Power the 3290-2 on
- Exit test mode
- Exit setup level 3
- Exit setup level 2 after selecting a new logical terminal set.

Selecting a Different Keyboard Layout

Action

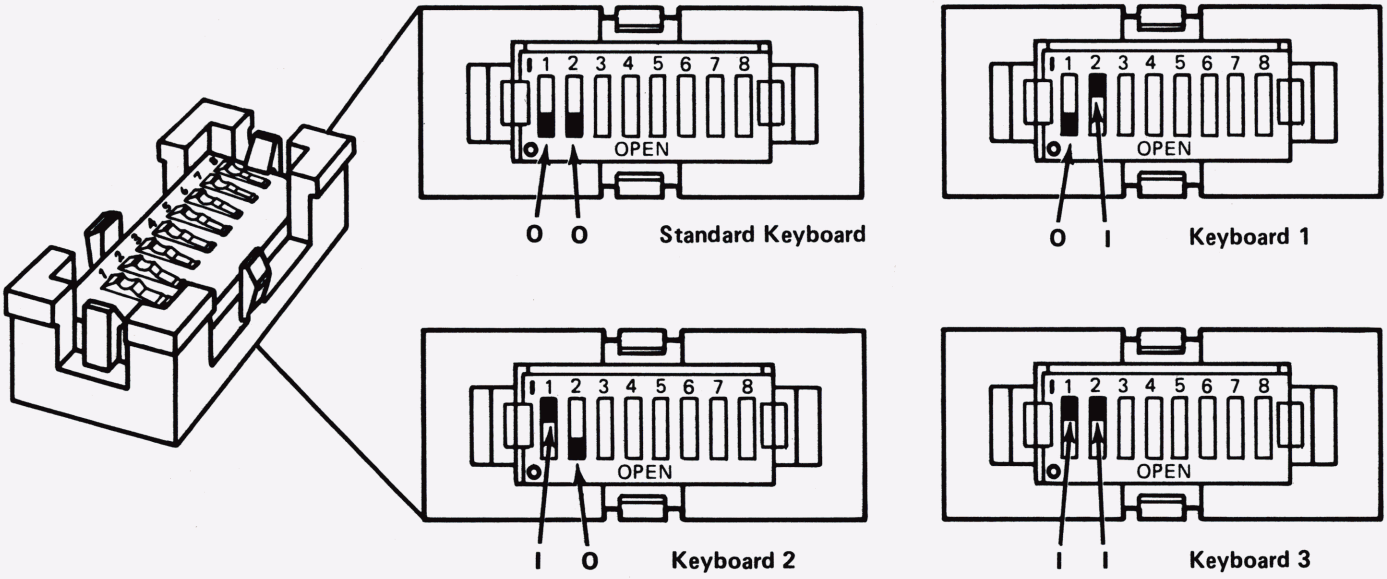
Example:

Set switches 1 and 2 to **OI** position.



The following table gives the setting for each keyboard ID. Set switches to O or I as required.

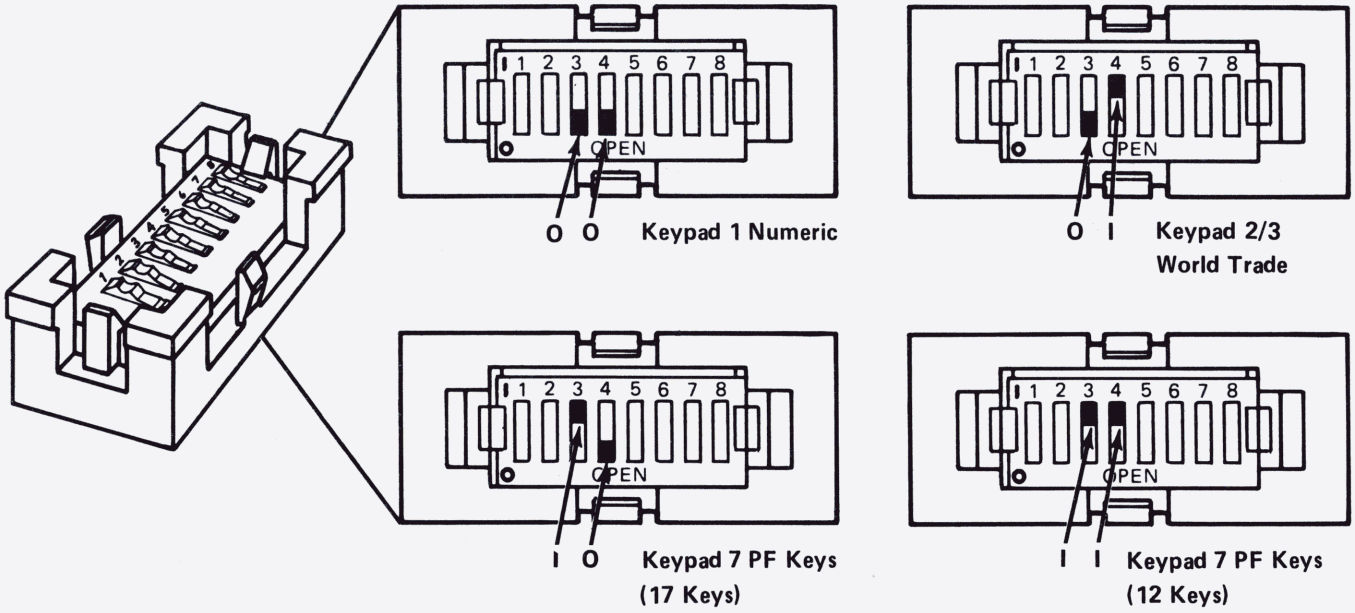
Keyboard ID Switches		Keyboard Selected
1	2	
O	O	Standard Keyboard (default)
O	I	Customer Modified Keyboard 1
I	O	Customer Modified Keyboard 2
I	I	Customer Modified Keyboard 3



Selecting a Different Keypad Layout

Keypad ID Switches		Keyboard Selected
3	4	
0	0	Keypad 1 Numeric (U.S. and Canada)
0	1	Keypad 2/3 World Trade (Comma and Decimal position swapped)
0	1	Keypad 7 PF Keys (17 keys plus Enter key)
1	1	Keypad 7 PF Keys (12 keys plus Enter key)

ID Switches 5 through 8 are set to **0000** (zeros):



Row/ Column Indicator

The Row/Column indicator displays the current cursor position in terms of row and column location. It helps you position the cursor accurately. The row and column location of either the active logical screen or the active partition appears on the right side of the operator information area. Each time the cursor moves, the indicator is updated to reflect the current cursor position.

This indicator does not appear when your 3290-2 is in setup mode or in copy screen mode.

Chapter 5.

Using the Entry Assist Function of Your 3290-2

This chapter discusses the modes of the 3290-2 entry assist function. The entry assist function provides capabilities that make it easier to enter and edit text material. There are three modes in entry assist:

- Document mode
- Change format mode
- Wordwrap mode.

Document Mode

Document mode must be active for you to use the entry assist function. Document mode enables some keys and enhances others to make entering and editing data easier. Press the **Document Mode On/Off** key (PF13 in extended select mode) to enter document mode. **DOC** appears in the operator information area to indicate document mode. The symbol ⇩ may also appear to indicate that wordwrap mode is enabled. The active logical terminal is in document mode until you exit document mode.

Entering Document Mode

Action	Result
With ▶ displayed, press PF13	

Document mode enables the following keys:

- Next Word
- Previous Word
- Delete Word

and enhances the following keys:

- Home
- Cursor Tab
- Backspace
- Newline.

To exit document mode, press the **Document Mode On/Off** key (PF13 in extended select mode).

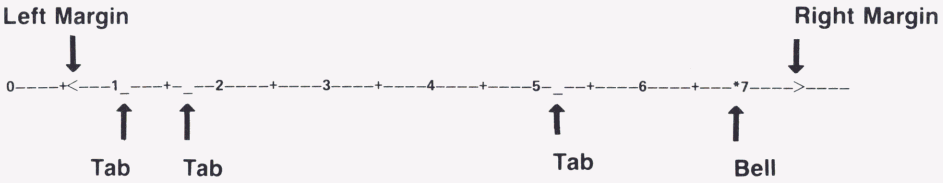
Setting Margins, Tabs, and a Bell

Change format mode allows you to establish or change the parameters you will use while entering and/or editing a document. In this mode, you can position and define margins, set tabs and a bell (an audible 'end of line' signal), and define a home position.

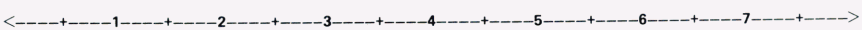
A scale line is used in establishing these parameters, providing a visual indication of their position.

Press the **Change Format** key (PF15 in extended select mode) with document mode active to enter change format mode. A scale line, replacing the cursor row, extends across the width of the active screen. You can move the scale line on the screen by pressing the **Cursor Up** (↑) and **Down** (↓) keys.

The picture below shows a scale line that has a left margin, a right margin, three tabs, and a bell.



Entering Change Format Mode

Action	Result
With ▶ displayed,	
press	

The first time you enter change format mode, the scale line starts at position 0. To change the origin of the scale line from 0 to 1, place the cursor at the first scale line position and press the **Cursr Sel** key. If you continue pressing the **Cursr Sel** key, the scale line origin alternates between 0 and 1.

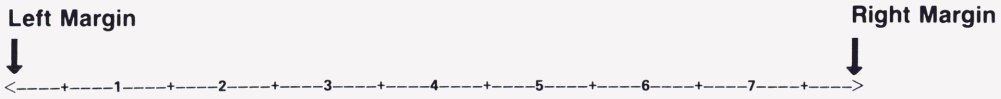
Press PF15 (in extended select mode) to exit change format mode. The row overlaid by the scale line is rewritten, the cursor returns to the position it occupied before you entered change format mode, and the margins, tabs, and bell are operative. (Exiting document mode also causes the 3290-2 to exit change format mode.)

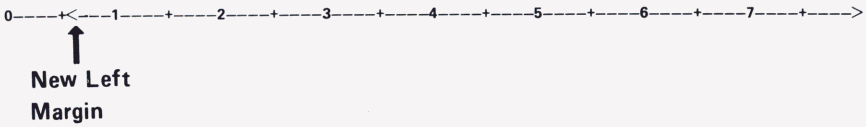
Setting the Left Margin

To set the left margin, position the cursor at the desired location on the scale line, using the **Cursor Left** (←) and **Right** (→) keys, and press the **Less Than** (<) key.

The previous left margin is replaced by the new one. Any tab or bell set at or to the left of the new left margin is retained. If the right margin is at or to the left of the new left margin, the right margin is reset to the rightmost position.

For example, to set the left margin on the scale line below:



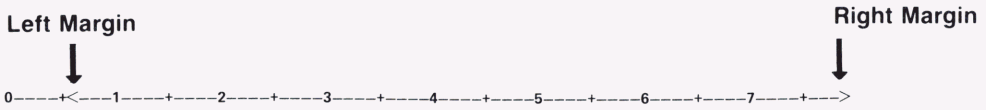
Action	Result
Position the cursor at the desired location on the scale line.	
Press	

Setting the Right Margin

To set the right margin, position the cursor at the desired location on the scale line using the **Cursor Left** (←) and **Right** (→) keys, and press the **Greater Than** (>) key while holding down either ⇧ key.

The previous right margin is replaced by the new one. Any tab or bell set at or to the right of the new right margin is retained. If the left margin is at or to the right of the new right margin, the left margin is reset to the leftmost position.

For example, to set the right margin on the scale line below:

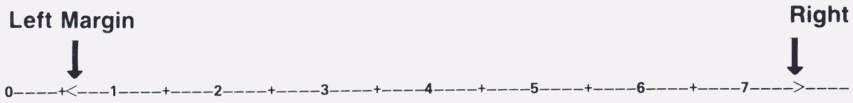


Redefining the Right Margin

You can select one of two types of right margins: a locking right margin (>) or a nonlocking right margin (¦). A locking right margin causes the keyboard to lock if you try to enter data in it when Wordwrap is not enabled. The nonlocking right margin does not cause the keyboard to lock if you try to enter data in it. (See *"Using Wordwrap"* in this chapter.)

The first time you enter change format mode, the right margin is a locking margin. To change it to a nonlocking margin, move the cursor under the > on the scale line and press the **Cursr Sel** key. The > changes to ¦ and the right margin becomes a nonlocking right margin. You can change it back to a locking position by pressing the **Cursr Sel** key again.

To change the right margin on the scale line below from a locking margin to a nonlocking margin:



Action	Result
Position the cursor at >	
Press Cursr Sel	0----+<---1----+----2----+----3----+----4----+----5----+----6----+----7----¦---- Nonlocking Right Margin

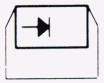
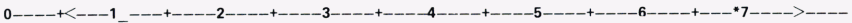
Setting a Tab

To set a tab, position the cursor at the desired location on the scale line, using the **Cursor Left** (←) and **Right** (→) keys, and press the **Forward Tab** (→|) key. An underscore (_) appears on the scale line at this location.

A maximum of 20 tabs can be set. If you try to set more than 20 tabs, ✖ > appears in the operator information area. This indicates **"Do Not Enter – Too Much Entered."**

Note: If you set a tab at the left margin, at the right margin, or at the bell, the underscore is not displayed, but the tab is set.

To set a tab on the scale line below:

Action	Result
Position the cursor at the desired locations on the scale line.	
Press 	

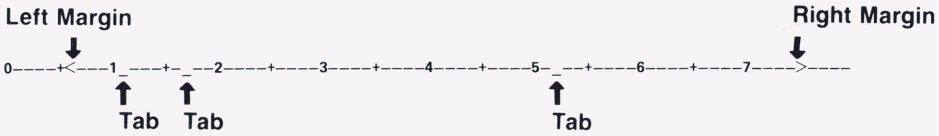
Setting the Bell

Only one bell at a time may be set on the scale line. To set the bell (end-of-line audible alarm), position the cursor at the desired location on the scale line, using the **Cursor Left** (←) and **Right** (→) keys, and press the **Asterisk** (*) key while holding down either ⇧ key. An * appears on the scale line at this location.

If you are in document mode and enter a character or tab forward, the audible alarm sounds when the cursor enters the bell column.

Note: If you set the bell at the left or right margin, the asterisk (*) is not displayed, but the bell is set.

To set the bell on the scale line below:

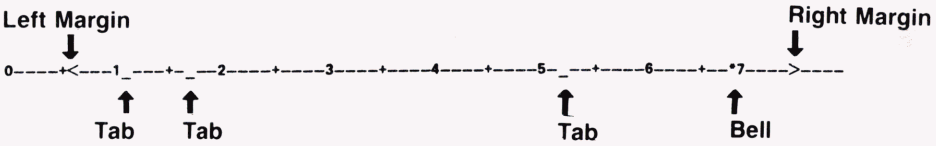


Action	Result
Position the cursor at the desired location of the scale line.	
Press ⇧ + 8	0----+<---1_---+-_--2----+----3----+----4----+----5_---+----6----+---*7---->----

Clearing a Tab or Bell

To clear a tab or the bell, position the cursor at the tab or bell setting on the scale line, using the **Cursor Left** (←) and **Right** (→) keys, and press the **Delete** (⌫) key.

For example, to clear a tab on the scale line below:

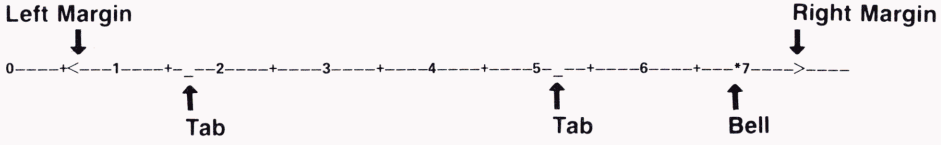


Action	Result
Position the cursor at a tab on the scale line.	
Press ⌫	0----+<---1----+---2----+----3----+----4----+----5---+---6----+--*7---->----

Clearing All Tabs

To clear all tabs, press the **Clear** key.

For example, to clear all tabs on the scale line below:

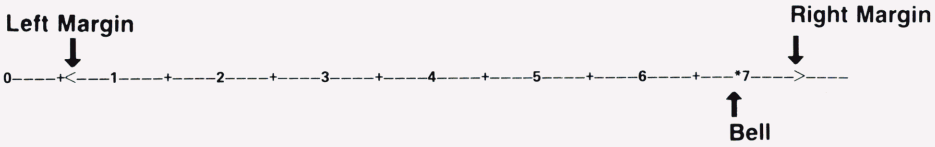


Action	Result
Press Clear	0----+<---1----+----2----+----3----+----4----+----5----+----6----+---*7---->----

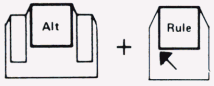
Defining the Home Position

To define a home position (starting position) in change format mode, move the scale line with the **Cursor Up** (↑) and **Down** (↓) keys to the desired row location. Move the cursor to the desired column location on the scale line with the **Cursor Left** (←) and **Right** (→) keys, and then press the **Home** (↖) key while holding down either Alt key. The scale line remains the same.

To define a home position on the scale line below:



Action	Result
Position the scale line at the desired row and the cursor at the desired location on the scale line.	0----+<---1----+----2----+----3----+----4----+----5----+----6----+---*7---->---- **Note:** There is no noticeable change on the screen, but the home position is now defined.

Press 

Using Wordwrap

Wordwrap mode allows the 3290-2 to automatically move the last word in the entry area to the next row. The entry area is defined as the area starting at the left margin and up to, but not including, the right margin.

The character at the right margin is not overlaid. The word wrapped is placed at the left margin of the next row. The positions it occupied are replaced with spaces. (See example given in "Using Wordwrap in Noninsert Mode," this chapter).

A wordwrap will be tried in the following cases:

- The logical terminal is not in insert mode, and you try to enter a character at the right margin. The cursor is wrapped with the word.
- The logical terminal is in insert mode, and you try to insert a character (other than a space) when the cursor is at the right margin. The cursor is wrapped with the word.
- The logical terminal is in insert mode, and you try to insert a character somewhere to the left of the right margin, and the insertion would cause a character to be moved into the right margin. If the cursor was under the word to be wrapped, it is wrapped with the word.

If you try to enter a space in the right margin, the cursor is placed at the left margin of the next row, and the space character is not entered.

If any of the following conditions exists, X> appears in the operator information area and no wrap occurs:

- The current row is the bottom row.
- The left margin of the next line is in a protected field.
- The entry area of the next row contains an attribute.

Entering Wordwrap Mode

While in document mode, press the Wordwrap key (PF14 in extended select mode) to enter wordwrap mode. ⇩ appears in the operator information area to indicate that the logical terminal is in wordwrap mode.

Wordwrap is automatically enabled the first time the logical terminal enters document mode after powering on. If wordwrap is enabled when document mode is exited, it is disabled but is reenabled the next time document mode is entered.

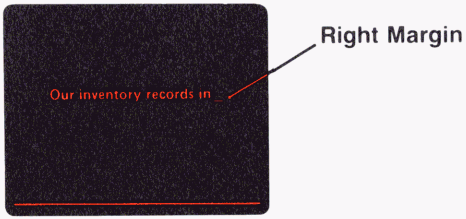
Action	Result
With ▸ and DOC displayed, press PF14	

To exit wordwrap mode, press the Wordwrap key (PF14 in extended select mode).

Using Wordwrap in Noninsert Mode

In noninsert mode, wordwrap is allowed only when the entire next row entry area contains only nulls and spaces. The word to be wrapped cannot occupy the entire entry area.

For example, when you enter a character in the right margin:



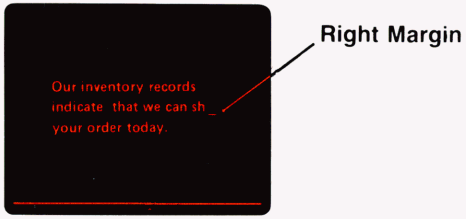
Action	Result
Continue typing.	

Using Wordwrap in Insert Mode

In insert mode, a wordwrap is allowed if, on the next line, the sum of the number of nulls in the entry area and the number of spaces following the last word in the entry area provides enough space for the word to be wrapped.

If the cursor is in the right margin and a character is entered, a wordwrap is tried.

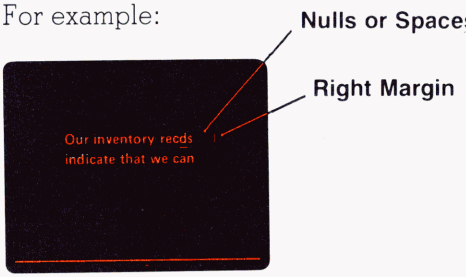
For example:

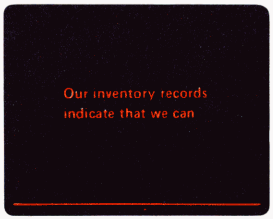


Action	Result
Insert *ip* into the word *ship*	

If the cursor is to the left of the right margin and the entry area has spaces or a null or both between the cursor position and the right margin, the insert operation is the same as when document mode is disabled.

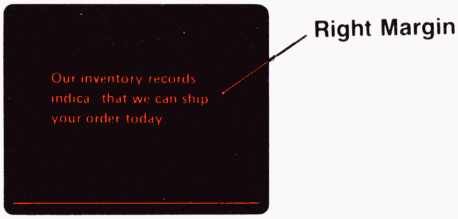
For example:



Action	Result
Insert *or* into the word *records*	

If the cursor is to the left of the right margin, the entry area has no null between the cursor position and the right margin, and the character to the left of the right margin is part of a word, an attempt is made to wrap the word to the following row.

For example:



Action	Result
Add *te* to the word *indicate*	

Appendix A.

3290-2 Indicators

This appendix defines the 3290-2 indicators that appear in the operator information area.

Symbol	Meaning
A	Online (non-SNA)
B	Online (SNA)
4	Ready
<n>	Setup
??	Copy Screen
TEST	Test
	System Operator
	My Job
?	Unowned
X	Do Not Enter—Security Key
X nnn	Do Not Enter—Machine Check
X 5nn	Do Not Enter—Communication Check
X	Do Not Enter—Printer Not Working
X	Do Not Enter—Printer Busy
X	Do Not Enter—Printer Very Busy
X PROG7nn	Do Not Enter—Program Check
X ?+	Do Not Enter—What ?
X	Do Not Enter—Terminal Wait
X -f	Do Not Enter—Minus Function
X -f X	Do Not Enter—Minus Function—Operator Unauthorized
X >	Do Not Enter—Too Much Entered
X NUM	Do Not Enter—Numeric Data Only

Symbol	Meaning
X ´+? X `+? X ^+? X ¨+? X ¸+?	Do Not Enter—Invalid Dead-Key Combination (Canadian-Bilingual and French Keyboards Only)
X ←→	Do Not Enter—Go Elsewhere
X ←→	Do Not Enter—Partition Wait
X SYSTEM	Do Not Enter—System Lock
X #?	Do Not Enter—What Number
X X	Do Not Enter—Operator Unauthorized
X UTL 1nn	Do Not Enter—Keyboard Definition Utility Error
→z 5nn	Communication Error Reminder
X ?+ : :SS.T MM.SS :?? ?	Response Timer Monitor Reply Not Customized Operator Unauthorized Seconds and Tenths Minutes and Seconds Timing Aborted
PSA PSB PSC PSD PSE PSF	Programmed Symbol Set (A through F) (Field-Defined)
SO	Nonloadable Character Set (Field Inherit)

Symbol	Meaning
PSA PSB PSC PSD PSE PSF	Programmed Symbol Set (A through F) (Field Inherit)
PSA PSB PSC PSD PSE PSF	Programmed Symbol Set (A through F) (Operator-Selected)
ALPHA	Alpha
カナ	Katakana
APL	APL
NUM	Numeric
⇧	Upshift
a	Normal — No highlighting (Field Inherit)
a	Blink Highlighting (Field Inherit)
a	Reverse Video Highlighting (Field Inherit)
a	Underscore Highlighting (Field Inherit)
a	Blink Highlighting (Operator-Selected)
a	Reverse Video Highlighting (Operator-Selected)
a	Underscore Highlighting (Operator-Selected)
^	Insert Mode
▶	Extended Select Mode
	Assign Printer

Symbol	Meaning
▫—▫nn	Printer Assignment
▫—◣nn	Printer Failure
▫—■nn	Printer Printing
▫—▫??	What Printer
DOC	Document Mode Indicator
⇩	Wordwrap Mode Indicator
▮→▩	Image Limit
	String Copy Function
	Block Copy Function
nnnn	Logical Terminal ID
rrrr/ccc	Row and Column Indicator

Appendix B.

Keyboard Description

This appendix briefly describes the function of each key. For more information, refer to *IBM 3290-2 Information Panel Description and Reference,* GA23-0241.

For easy reference, the keys are grouped into five sections:

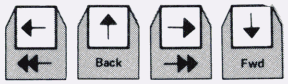
- Left Control Keys
- Right Control Keys
- Data Keys
- Program Function Keys
- Keypad Keys

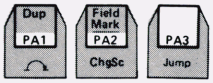
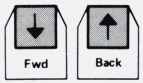
Left Control Keys

Key	Function
	Signals the application program when your 3290-2 is in an SNA environment.
	Erases the active screen and moves the cursor to row 1/column 1.
	Erases the active partition and moves the cursor to row 1/column 1 of that partition.
	Selects fields that are defined as selectable.
	Erases data from the current cursor position to the end of the field.

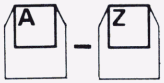
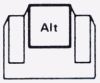
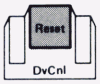
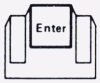
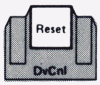
Key	Function
	Erases the contents of all unprotected fields and moves the cursor to the first unprotected field.
	Allows you either to display or to change the printer ID, depending on which printer status indicator is displayed.
	Causes your 3290-2 to enter copy screen mode. In copy screen mode, you can either copy the active screen to a copy screen or print it on a printer.
	Causes your 3290-2 to enter or exit setup mode.
	Changes the function of certain PF keys.
	In an SNA environment, this key changes the screen ownership alternately between ▮ or ? and ▮. In a non-SNA environment, it signals the application program to initiate a test request if you are in implicit partition state.
	Places the 3290-2 in text mode to run subsystem routines.
	Enlarges selected portions of data on the screen.

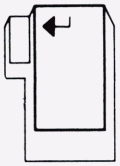
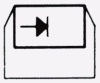
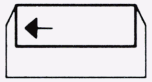
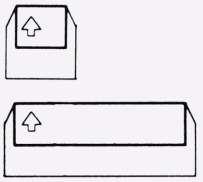
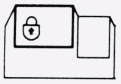
Right Control Keys

Key	Function
	Moves the cursor back to the first portion of an unprotected field.
	Moves screens between the panel and the background queue.
	Moves the cursor in the direction of the arrow.
	Deletes the character at the current cursor position.
	In document mode, deletes the characters from the current cursor position to the end of the word.
	Informs the application program that the rest of the field should be duplicated.
	Informs the application program of the end of a field.
	Moves the cursor to the first position of the active screen or partition. In change format mode, it defines the home position at the current cursor position. In document mode, it moves the cursor to the previously defined home position.

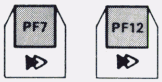
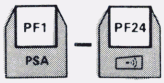
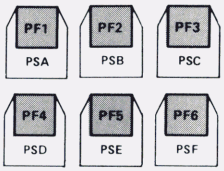
Key	Function
	Places the keyboard in insert mode and allows characters to be inserted in a field.
	Moves the cursor to the next partition. If you have only one partition, this key has no effect.
	Moves the cursor to the next logical screen.
	Moves the cursor to the first character of the next word.
	Moves the cursor to the first character of the previous word.
	These keys are defined by the application program.
	Displays a rule line under a single row of characters.
	Moves data in a scrollable partition, up or down in the viewport.

Data Keys

Key	Function
	These keys operate as they would on a typewriter or other 3270 display.
	Allows you to select the function on the front of all the keys.
	The APL characters are used in APL mode.
	Cancels a pending print request to the printer or cancels a string or block copy operation.
	Transmits data from the active screen or partition to the application program.
	Unlocks the keyboard and removes most Do Not Enter indicators from the operator information area. This key also resets insert mode.

Key	Function
	Moves the cursor to the next line or to the first unprotected position after the current line. In document mode, this key moves the cursor to the first unprotected location of the entry area after the current line.
	Moves the cursor to the first character position of the next unprotected field. In change format mode, this key is used to set tab positions on the scale line.
	Moves the cursor to the left, one position at a time. In document mode, during an insert operation, this key deletes the character to the left of the cursor position and moves the cursor back one position.
	Either key allows you to enter the upper of the two characters marked on a key top.
	Locks keyboard in uppercase shift condition.

Program Function Keys

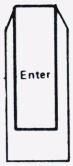
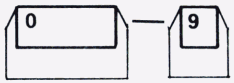
Key	Function
	Selects between underscore and reverse video cursor image.
	Changes the keyboard between APL and typewriter modes.
	Causes characters to blink if the application program allows this feature.
	Turns the keyboard clicker on and off.
	Causes highlighting or programmed symbol selection to be controlled by the application program.
	Defined by the application program.
	Allow you to select allocated symbol set.
	Causes entered characters to be displayed in reverse video.
	Causes entered characters to be displayed with an underscore.

Extended Select Keys

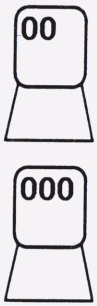
Key	Function
	PF13 in extended select mode, turns document mode on and off.
	PF14 in extended select mode, turns wordwrap mode on and off.
	PF15 in extended select mode, turns change format mode on and off.
	PF16 in extended select mode, enables a string copy operation.
	PF17 in extended select mode, enables a block copy operation.
	PF18 in extended select mode, allows you to monitor the response time of your 3290-2.
	PF19 in extended select mode, allows you to change the intensity option in the active partition.

Keypad Keys

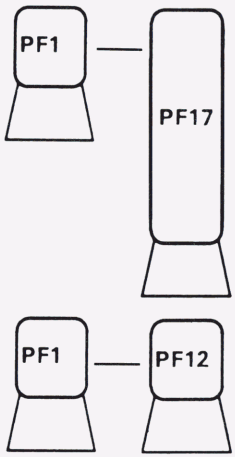
Numeric Keypad (U.S. and Canada)

Key	Function
	Transmits data from the active screen or partition to the application program.
	These keys operate as they would on a typewriter or 3270 system keyboard.
	When the cursor is in an unprotected field and you press the space key, a space is entered at the cursor position.
	Moves the cursor to the right, one position at a time. In document mode, during insert operation, this key deletes the characters to the right of the cursor position and moves the cursor back one position.
	This key operates the same as on a typewriter or 3270 system keyboard.
	This key operates the same as on a typewriter or 3270 system keyboard.
	This key operates the same as on a typewriter or 3270 system keyboard.

World Trade Numeric Keypads

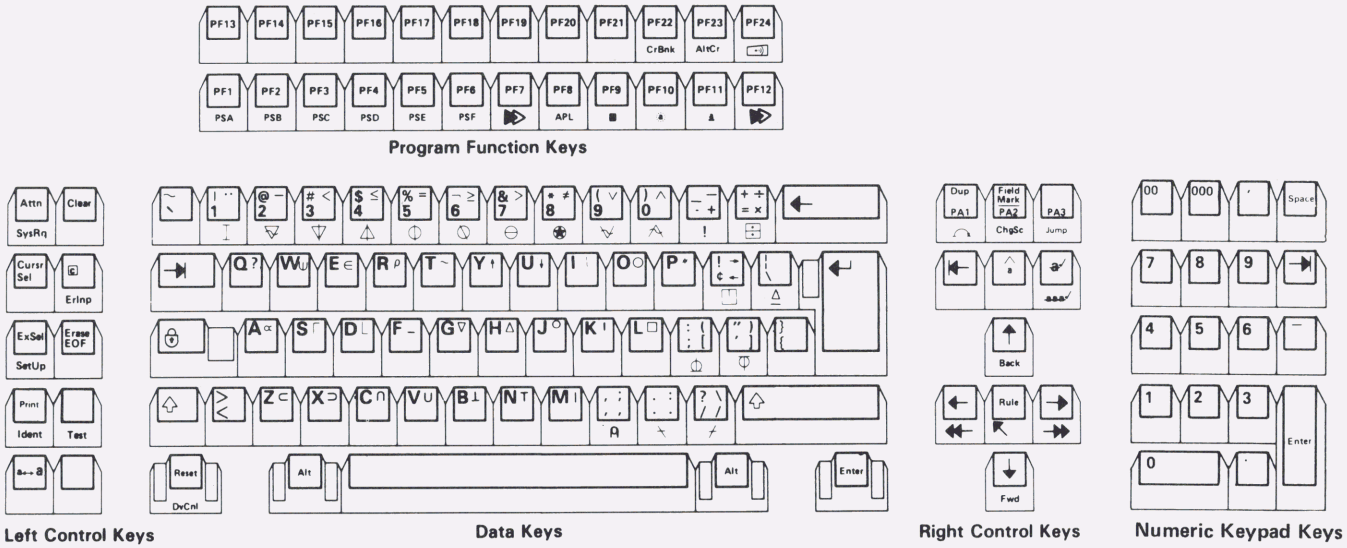
Key	Function
	There are two layouts of the World Trade keypad. The only difference is that the comma and decimal sign key locations are swapped. The keypad keys are functionally the same as the U.S. and Canada numeric keypad with the addition of the 00 and 000 keys. These keys enter either two zeros or three zeros each time the key is pressed. The keypad keys are not typamatic.

Program Function Keypads

Key	Function
	There are two layouts of the Program Function keypad; the 17-key and the 12-key for program function assignments. The enter key functions the same as on a typewriter or 3270 system keyboard. The keys are not typamatic.

APL-Character Key Layout

APL character labeled keytops are available in kit form to convert the IBM standard keyboard to show APL character keys. See the APL keyboard layout below:



Appendix C.

Error Code Charts

This appendix contains the error codes that may appear in the operator information area.

Error Code	Probable Cause	Action
Blank Screen	3290-2	Contact your local IBM representative. See *Problem Analysis Procedures* in *IBM 3290-2 Information Panel Installation and Problem Determination Guide*, GA23-0324.
nnnn 1110	1. Keyboard cable not plugged in.	Check the keyboard cable.
1111	2. Defective 3290-2.	Contact your local IBM representative.
0001 0010 0011 0100 0101 nnnn 0110 0111 1000 0001 □ 0001 □ nnnn 0001	Defective 3290-2.	Contact your local IBM representative.
1000	1. Control unit not ready or signal cable not connected or damaged.	Ensure that the signal cable is properly connected. If the problem still exists, follow local procedures for reporting problems with the control unit.
	2. Defective 3290-2.	Contact your local IBM representative.

Note: n = 0 or 1.

Error Code	Probable Cause	Action
□ □ nnnn	1. Control unit communication interrupted during downstream load.	Follow local procedures for reporting problems with the control unit.
	2. 3290-2 microcode.	Follow local procedures for reporting problems with the control unit.
	3. Defective 3290-2.	Contact your local IBM representative.
1000 0010 □ nnnn 0010	Control unit diskette not ready.	1. Ensure that the correct diskette is in the control unit and that the diskette drive door is closed. 2. Turn 3290-2 power off and then on. 3. Wait 2 minutes (testing). 4. If problem still exists, follow local procedures for reporting problems with the control unit.
1000 0011 □ nnnn 0011	Requested file cannot be found.	1. Turn 3290-2 power off then on. 2. Wait 2 minutes (testing). 3. If the problem still exists, follow local procedures for reporting problems with the control unit.
1000 0100 □ nnnn 0100	Control unit failure.	
1000 0101 □ nnnn 0101	Control unit machine check.	
1000 0110 □ nnnn 0110	Sync Check-failure to execute microcode.	
Any other problem	3290-2	Contact your local IBM representative.

Note: n = 0 or 1.

Error Code	Probable Cause	Action
2nn	Machine check.	1. Press Reset and try again. 2. If the problem still exists, follow local procedures for reporting problems. 3. When the problem is resolved, press Reset and retry the operation.
3nn	Machine check.	1. Press Reset and try again. 2. If the problem still exists, follow local procedures for reporting problems. 3. When the problem is resolved, press Reset and retry the operation.
4nn	Program check.	1. Press Reset and try again. 2. If the problem still exists, follow local procedures for reporting problems. 3. When the problem is resolved, press Reset and retry the operation.
5nn	Communication check.	1. Press Reset and try again. 2. If the problem still exists, follow local procedures for reporting problems. 3. When the problem is resolved, press Reset and retry the operation.
620	Invalid keyboard scan code.	1. Press Reset and try again. 2. If the problem still exists, turn power off, then on again, and retry the operation. 3. If the problem still exists, refer to *IBM 3290-2 Information Panel Installation and Problem Determination Guide,* GA23-0324.
621	Incompatibility between language of control unit and display station.	Check diskette customizations.

Error Code	Probable Cause	Action
630	Unknown diskette or hardware error.	1. Press Reset and try again. 2. If the problem still exists, follow local procedures for reporting problems with the control unit. 3. When the problem is resolved, press Reset and retry the operation.
631	Diskette file not found.	1. Press Reset and try again. 2. Check that the correct diskette is in the control unit. 3. If the problem still exists, follow local procedures for reporting problems with the control unit. 4. When the problem is resolved, press Reset and retry the operation.
632	Diskette media error.	1. Press Reset and try again. 2. Replace the diskette in the control unit. 3. If the problem still exists, follow local procedures for reporting problems with the control unit. 4. When the problem is resolved, press Reset and retry the operation.
633	Diskette overrun.	1. Press Reset and try again. 2. If the problem still exists, follow local procedures for reporting problems with the control unit. 3. When the problem is resolved, press Reset and retry the operation.

Error Code	Probable Cause	Action
634	Unable to write to diskette file.	1. Check that the correct diskette is in the control unit. Press Reset and retry the operation. 2. If the problem still exists, follow local procedures for reporting problems with the control unit. 3. When the problem is resolved, press Reset and retry the operation.
635	Diskette not ready.	1. Check that the correct diskette is in the control unit. Press Reset and retry the operation. 2. If the problem still exists, follow local procedures for reporting problems with the control unit. 3. When the problem is resolved, press Reset and retry the operation.
636	Diskette file locked (file being used by another operator).	1. Press Reset and wait until the other operator is finished before trying again. 2. If the problem still exists, follow local procedures for reporting problems with the control unit. 3. When the problem is resolved, press Reset and retry the operation.
637	Diskette file overflow.	1. Press Reset and try again. 2. If the problem still exists, follow local procedures for reporting problems with the control unit. 3. When the problem is resolved, press Reset and retry the operation.
638	Unable to read the diskette file.	
639	Diskette file not locked.	

Error Code	Probable Cause	Action
640	Wrong diskette in control unit.	1. Make sure the correct diskette is in the control unit. Press Reset and try again. 2. If the problem still exists, follow local procedures for reporting problems with the control unit. 3. When the problem is resolved, press Reset and retry the operation.
641	Error queue overflow.	Press Reset.
650	Translate table array.	1. Turn power off, then on again. 2. Retry the operation. 3. If the problem still exists, turn power off, then on again, and refer to *IBM 3290-2 Information Panel Installation and Problem Determination Guide,* GA23-0324.
651 652	Panel adapter error.	
653	Storage parity or data error.	
654	Control unit-to-device-protocol error.	
655	Undefined keyboard table.	1. Correct the keyboard ID switch setting. 2. Turn power off, then on again.
656	Keyboard ID table code does not match diskette language code.	

Error Code	Probable Cause	Action
661 to 668	Storage parity or data error.	1. Turn power off, then on again. 2. Retry the operation. 3. If the problem still exists, turn power off, then on again, and refer to *IBM 3290-2 Information Panel Installation and Problem Determination Guide*, GA23-0324.
697	Expedited status queue overflow.	
698	Asynchronous status queue overflow.	
699	A machine check detected within the terminal cannot be isolated in more detail.	
700 to 799	—	1. Press Reset and try again. 2. If the problem still exists, record the Error Code number and contact your host/support programmer.

Glossary

A

active logical screen. The logical screen that contains the cursor.

active logical terminal. The logical terminal that contains the cursor.

active partition. The partition in which the cursor is located.

B

background screen. A screen that is not displayed but can interact with the host.

C

copy screen. An unbuffered screen area into which data can be copied.

D

display space. the area of the panel above the separator line.

Do Not Enter. A symbol (X) in the operator information area that indicates to the operator that data cannot be entered.

E

entry area. The area starting at the left margin and continuing to, but not including, the right margin.

H

home position. The first unprotected character position in a screen or partition.

I

image limit. A condition that occurs when the maximum number of PELs are lit on the 3290-2.

L

logical screen. The data that is actually displayed, based on the status of the logical terminal.

logical terminal. In a 3290-2 environment, a software simulation of a physical terminal. More than one logical terminal can exist in the 3290-2, and each can interact with the host.

N

null. An empty character position that can be filled by characters entered either from the keyboard or by the host program.

O

operator information area. The area of the panel below the separator line that is reserved for symbols and messages informing the operator of the operational status of the 3290-2.

P

partition. All or a portion of the screen area of a display space and its character buffer. Data is presented within the partition through a view port that is defined when the partition is created. Data is logically stored in the presentation space, and that portion of the data that is within the window may be displayed in the viewport.

PEL. Picture element.

picture element (PEL). The smallest element of a display space that can be produced on the 3290-2.

presentation space. A virtual two-dimensional surface on which data for the partition is represented.

protected field. On a display device, a field in which the operator cannot enter, modify, or erase data.

R

reverse video. A means of highlighting a character or a field by reversing the light intensity between the character and its background; for example, changing a normally black-on-white character to a white-on-black character.

rule line. A single horizontal line under one row of characters within a logical screen or partition.

S

screen area. A portion of the display space.

separator line. A line that appears near the bottom of the panel to separate the display space from the operator information area.

U

unprotected field. On a display device, a field in which the operator can enter, modify, or erase data.

V

viewport. A rectangular area on the display space through which the operator views the data. In nonscrollable partitions, the viewport and the presentation space are the same.

Z

zoom. A function that displays the active logical screen or partition in the largest allowable character size.

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