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## **Systems Reference Library**

### **Operator Manual**

#### **IBM 2260 Display Station**

#### **IBM 2848 Display Control**

#### **IBM 1053 Printer**

This manual describes the operating characteristics of the IBM 2260 Display Station and the IBM 2848 Display Control. The two units combine to provide visual access to data stored in an IBM System/360.

This manual also contains a section on operating the IBM 1053 Printer that can be attached to this system for printing the messages displayed on the screen.

All functions described in this manual refer to the Models 1 and 2 of the 2260, Models 1, 2, and 3 of the 2848, and Model 4 of the 1053.



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Second Edition (July 1968)

This is a minor revision of C20-1688-0 incorporating two photos of the 1053 Printer with callouts showing the relative positions of the control levers.

Copies of this and other IBM publications can be obtained through IBM branch offices. Address comments concerning the contents of this publication to IBM, Technical Publications Department, 112 East Post Road, White Plains, N. Y. 10601

## INTRODUCING THE IBM 2260 DISPLAY STATION

The IBM 2260 Display Station opens up an exciting new way of looking at computer data. Entering data is simply a matter of keying in the desired characters, verifying them as they appear on the viewing screen, and then, at the touch of a key, passing the complete message along to the computer.

Messages from the computer to the 2260 are displayed on the screen for action by the operator. The displayed data is updated, corrected, or deleted by means of the 2260 keyboard. The format of data to be handled by the display station can be programmed beforehand to avoid keying repetitive information.

Once the functions of the special keys and characters are understood, keying of the 2260 becomes as simple as typing.



## DISPLAY FORMATS

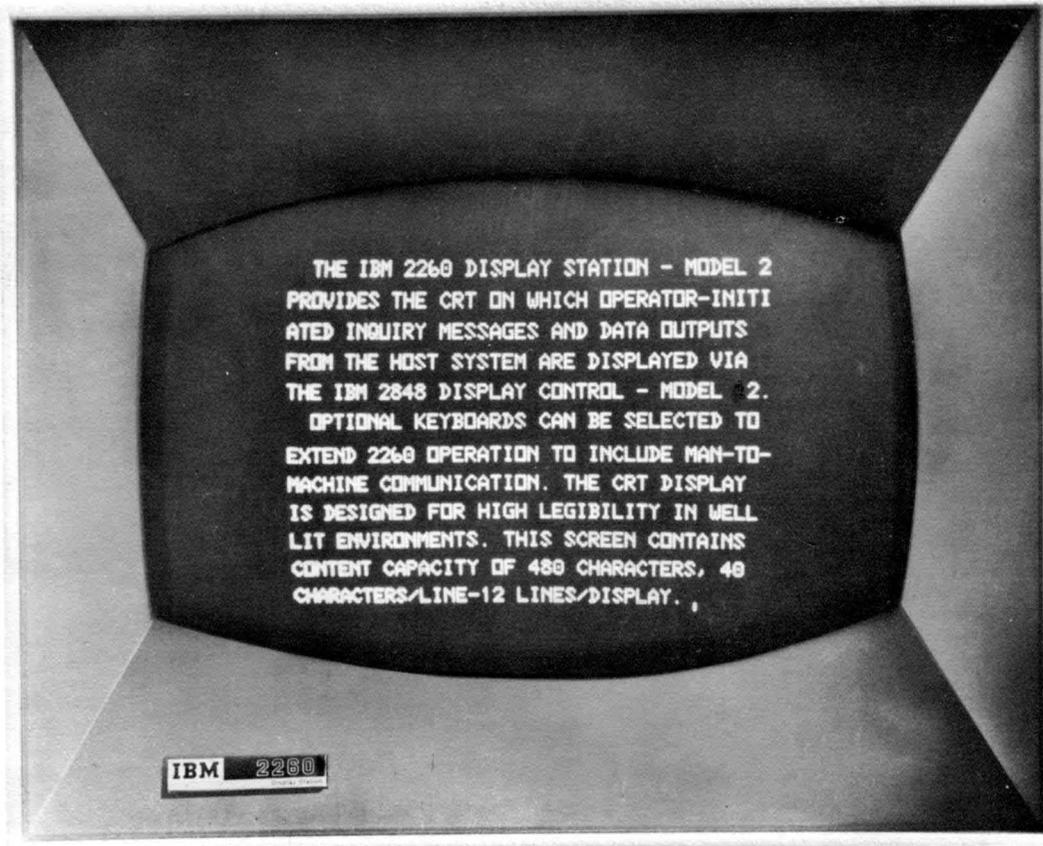
The IBM 2260 Display Station is available with display capacities of 240, 480, or 960 characters, depending on the model of the display station control unit used.

Characters are displayed on the screen in one of three basic formats:

- 6 rows of 40 characters (240)
- 12 rows of 40 characters (480)
- 12 rows of 80 characters (960)

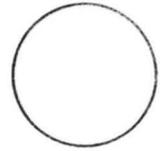
Sixty-four different characters are available as follows:

- 26 alphabetic characters
- 10 numeric characters
- 25 special symbols
- 3 control symbols



## CONTROLS

### On/Off



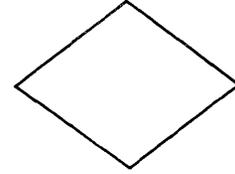
The ON/OFF knob located on the right side panel of the display station should be pulled outward to turn on the display. The display station is turned off by pushing this knob in.

### Brightness

The ON/OFF knob should be turned clockwise until the cursor symbol or other data appears on the screen with sufficient brightness to suit the operator. Brightness decreases when the knob is turned counterclockwise.



## CONTROL SYMBOLS



The 2260 Display Station provides several control symbols that appear on the screen, but not all of these are found on the keyboard. Control symbols include the Destructive Cursor, Nondestructive Cursor, Start, New Line, and Check. Their use is explained on the following pages.

### Cursor

The cursor is an automatically inserted, visual position marker that locates the display position to be occupied by the next character entered from the keyboard. It also serves as an end-of-message symbol when the operator enters a message into the computer.

Two types of cursors are available with the 2260. The destructive cursor is standard, while the nondestructive cursor is an optional feature. Because their operation differs, the operator should become thoroughly familiar with the operation of the type of cursor found on the 2260 being used. The cursor appears in the first display position when the 2260 is turned on.

### Destructive Cursor

This symbol appears on the screen as a heavy horizontal bar (■) that marks the position to be taken by the next character entered from the keyboard. The destructive cursor symbol is advanced or backspaced one space at a time; moved directly to the beginning of the next line; or reset to the first position after the START symbol by pressing the SHIFT and START keys.

When this symbol is advanced, backspaced, or otherwise moved to a display position already containing a character, that character is erased and replaced by the cursor symbol. When a character is entered from the keyboard, it takes the place of the cursor symbol while the cursor is moved one position to the right. If that happens to be the last position on that line, the cursor appears on the leftmost position on the next line. If it happens to be the last position on the last line, the cursor automatically wraps around to the first position on the top line.

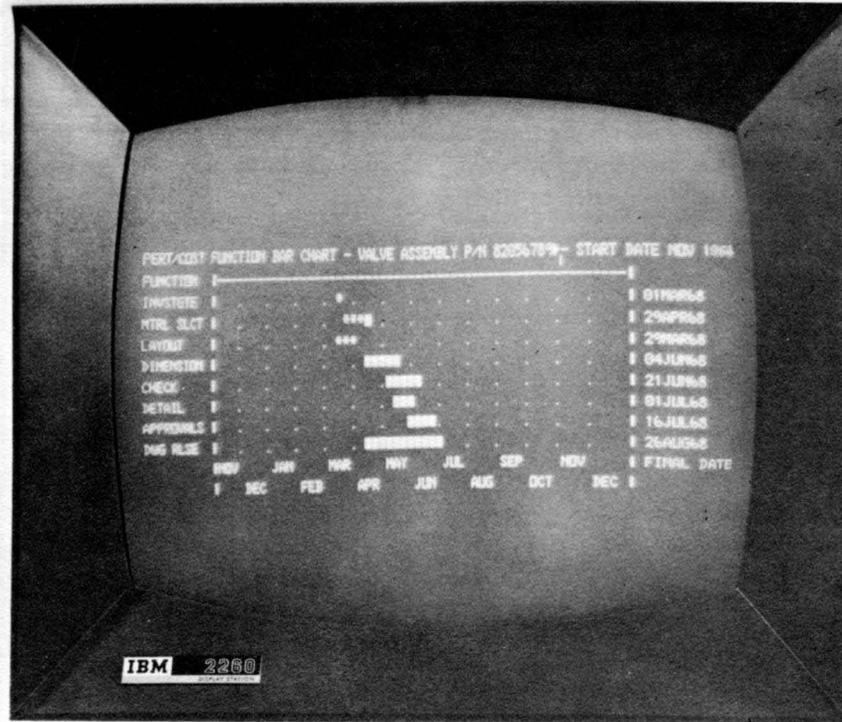
How certain other keys affect the movement of the cursor is explained in the keyboard section of this manual.

### Nondestructive Cursor

This symbol is available instead of the destructive cursor symbol as a character position marker. The nondestructive cursor does not take up a character space but appears as a vertical bar (|) slightly below the writing line and to the left of the position to be taken by the next character.

When a character is entered from the keyboard, the cursor moves one character distance to the right. The cursor is advanced, backspaced, or moved up or down without erasing the characters it passes. If the character happens to be the last one on the line, the cursor appears in the first position of the next line. If this line happens to be the last line of the display, the cursor appears to the left of the first character position of the top line. Striking the BACKSPACE key in this position causes the cursor to appear in the last position of the bottom line.

The end-of-message symbol generated on the screen by pressing both the SHIFT and ENTER keys looks like the destructive cursor symbol (■) but does not function as a destructive cursor.



### Start

Data keyed in by the operator appears to the right of the start symbol (▶). This symbol marks the beginning of manually keyed data to be transmitted from the 2260 to the computer. Only the string of characters appearing between the start symbol and the cursor is entered, unless the computer program specifically asks for all characters on the screen to be transmitted.

This symbol appears on the screen if the computer program calls for it, or if the operator presses the START and SHIFT keys.

### New Line

The new line symbol (▲) marks the end of a line of data. Any characters to the right of this symbol on the same line will not be transmitted to the computer when the ENTER key is used. This allows computer-generated “preprinted-form” type information to the right of this symbol to be displayed. Only data keyed by the operator is sent to the computer. Pressing the NEW LINE key and the SHIFT key moves the cursor to the start of a new line.

The computer program automatically places the new line symbol at the end of each line it places on the screen.

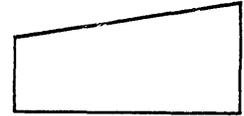
If more than one new line symbol is generated on a line as a result of backspacing the cursor up from the line below, and then entering characters to the right of the first new line symbol, only the first new line symbol will be recognized by the computer program.

## Check

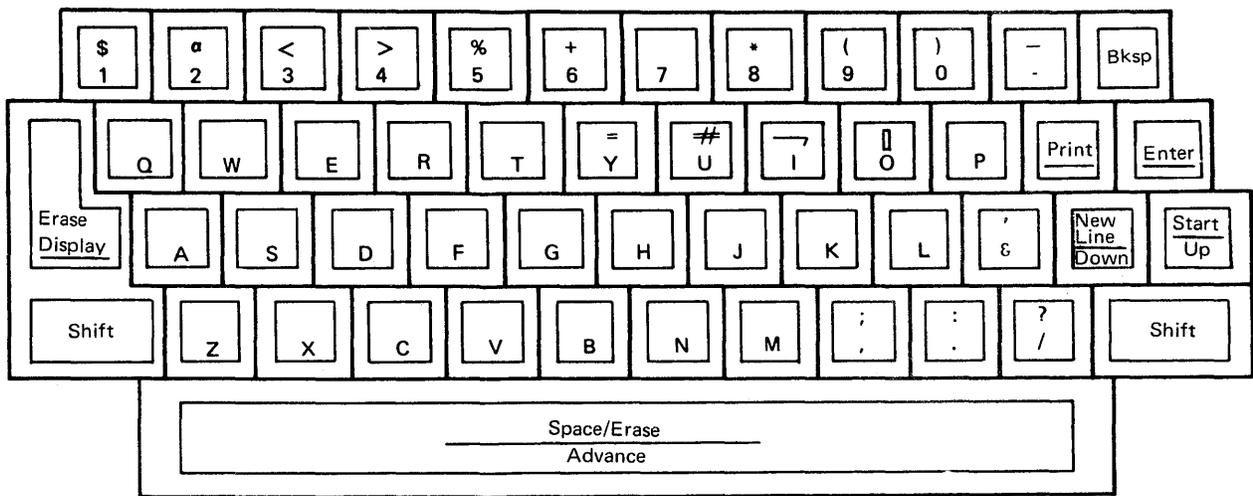
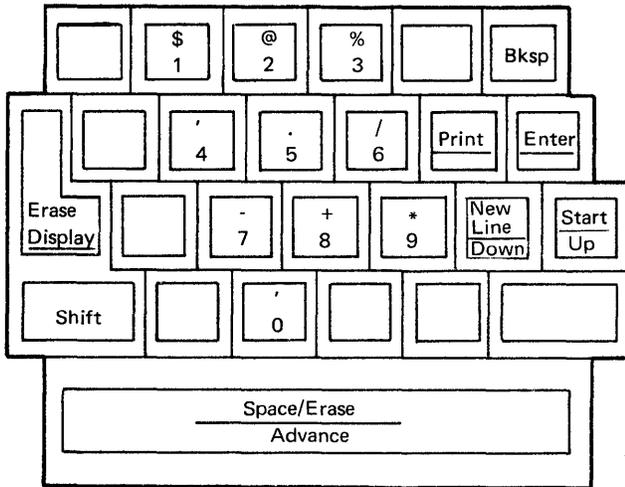
The check symbol (■) is a means of letting the operator know that an error occurred during transmission of data between the 2260 and the computer. The symbol shows up in the position that would have been occupied by the character in error.

Check symbols also appear if certain keys are used incorrectly. For example, if a lower case key with no upper case character is used with the SHIFT key, a check symbol appears in the character position in which the error stroke occurred. The cursor must be moved to this position and the proper character must be inserted by the operator.

# KEYBOARDS



The 2260 is available with optional numeric or alphameric keyboards. Both types of keyboards have the same control keys, but the number of special characters is greater on the alphameric keyboard.



## Shift

This key is used with all uppercase characters and uppercase control functions. Simultaneous use of the SHIFT key with the ENTER key is required to prevent accidental transmission of partial data if the operator unintentionally presses the ENTER key.

## Space/Erase

When used with the destructive cursor, this bar places a blank in the current cursor position and advances the cursor one position to the right. Use with the SHIFT key does not change this operation.

When used with the nondestructive cursor, this bar advances the cursor one position to the right without erasing displayed data. When used in conjunction with the SHIFT key, it erases the characters to the right of the cursor and advances the cursor one position.

## Advance

When used with the destructive cursor, this bar places a blank in the cursor position and advances the cursor one position to the right.

With the nondestructive cursor it simply moves the cursor one position to the right.

## Backspace

When used with the destructive cursor, this key moves the cursor one character position to the left and erases that character. If the cursor happens to be in the first display position of a line, it is shifted to the end of the previous line; if it happens to be at the beginning of the top line, it wraps around to the end of the bottom line. When backspacing near the new line symbol be careful not to delete this symbol.

With the nondestructive cursor the operation is the same except that no erasure takes place.

## Erase Display

When this key is pressed in conjunction with the SHIFT key, all displayed data is erased and the cursor is automatically positioned in the first displayable position. If the ERASE DISPLAY key is pressed without also pressing the SHIFT key, the check symbol appears in the cursor position and the cursor moves one position to the right.

## Start/Up

When this key is used with the SHIFT key and no start symbol is visible when the START and SHIFT keys are pressed, a start symbol is placed in the position identified by the cursor and the cursor is moved one position to the right.

If a start symbol is already displayed when this key is pressed, all displayed data between the first start symbol and the cursor is erased, except for information to the right of the new line symbol. The cursor then appears in the position following the first start symbol. (This is not a normal procedure but it can be used for correcting errors.)

When this key is used without the SHIFT key and with the destructive cursor, the UP function

writes a blank and moves the cursor one position to the right.

When used without the SHIFT key and with the nondestructive cursor, the START/UP key moves the cursor up one line in the corresponding character position. If this line happens to be the top line, the cursor moves to the bottom line.

## **Enter**

The ENTER key is used to send data to the computer. When used with the destructive cursor and in conjunction with the SHIFT key, the ENTER key transfers all data between the start symbol and the cursor except information to the right of the new line symbol.

When used with the nondestructive cursor and in conjunction with the SHIFT key, the ENTER key places the end-of-message symbol in the cursor position. All data between the start symbol and the end-of-message symbol is transferred to the computer. Information to the right of the new line symbol is not normally included. However, the computer can be programmed to transfer all displayed data.

After a successful message transfer the cursor remains in its previous position and the start symbol is deleted. The computer may be programmed to determine where on the screen the start symbol is to appear for the next display. Otherwise, the START key and the SHIFT key may be used.

When the ENTER key is used without the SHIFT key, a check symbol is placed in the cursor position and the cursor is moved one position to the right. (This indicates an error.)

## **New Line/Down**

When used in conjunction with the SHIFT key this key places the new line symbol in the cursor position and moves the cursor to the first display position of the next lower display line. If already on the bottom line, the cursor wraps around to the first display position on the top line.

When used with the destructive cursor but without the SHIFT key the NEW LINE/DOWN key puts a blank in the cursor position and moves the cursor one position to the right.

When used with the nondestructive cursor, this key moves the cursor down one line in the corresponding character position. If already at the bottom, it wraps around to the top line.

## **Print**

When used with the SHIFT key, this key causes all data, from the first displayable position to the cursor, except data to the right of the new line symbol, to be printed on the IBM 1053 Printer.

If no printer is attached to the system, a blank is placed in the display position occupied by the cursor. (This indicates an error.)

When the PRINT key is pressed, the keyboard locks momentarily to prevent interference with the internal transmission of the data in the control unit. While transferring data to the printer, the control unit will accumulate printer messages from other displays attached to that control unit, and will print them in sequence.

Occasionally a keyboard locks when too many messages for the printer are received. If a 2260 operator does not want to wait when this happens, the keyboard can be unlocked by using the ERASE DISPLAY key, but this will erase all data on the screen.

Some character substitution takes place during printing. The cursor or end-of-message symbol is printed as an exclamation mark (!), the check symbol prints as quotation marks (”), and the start symbol prints as a cent (¢) sign.

## IBM 1053 PRINTER OPERATION

The following paragraphs describe the features and controls of the printer used with the 2260 Display Station.

### Motor On-Off

This switch controls the printer motor. Do not turn off this switch during printing, because this will lock up all display station keyboards connected to the particular control unit.

### Power

This light on the 1053 remains on as long as the mainline switch on the 2848 control unit is on.

### Left Margin Set Lever

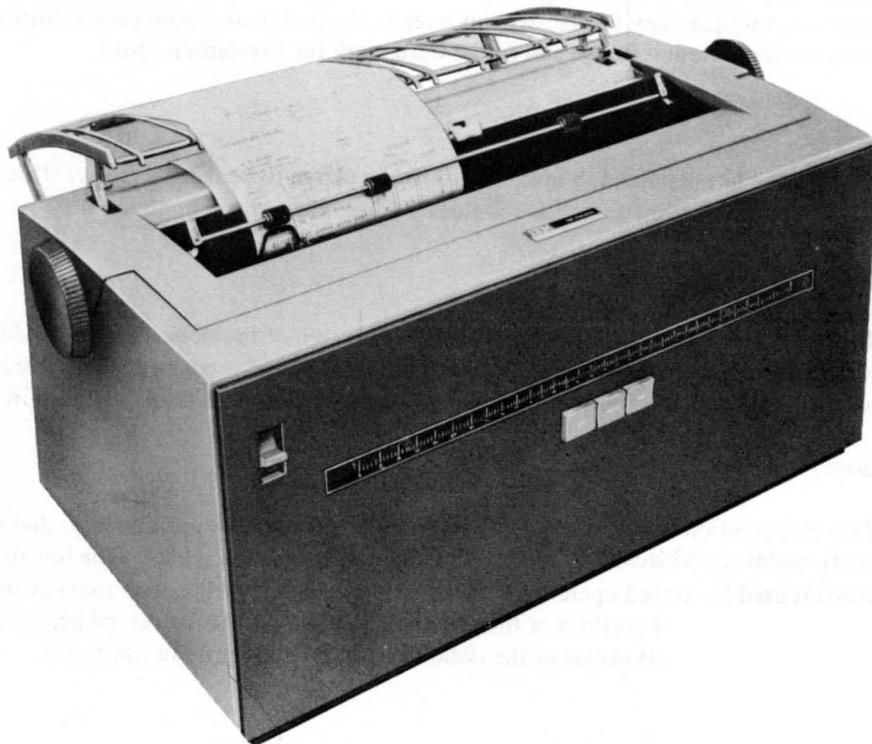
This lever allows the operator to adjust the location of the left margin. To change the stop position, proceed as follows:

Turn on motor switch on 1053.

Move print-element carrier to center of line by pressing space bar on 2260 keyboard.

Turn off motor switch.

Lift the top cover and press in on the blue margin-indicator (toward the platen) and slide the margin-indicator to the new location. The exact position of the margin can be located on the ruled margin guide. The white indicator shows the position of the print element carrier.



## **Paper Insertion**

Hold paper with both hands.  
Feed paper behind the horizontal metal plate.  
Make sure the paper feeds behind the chrome roller.  
Feed paper around platen.  
Move the release lever to its back position.  
Turn the blue knobs until the paper comes around to the front of the printer.  
Push rubber rollers against the paper.

## **Paper Release Lever**

When this lever is moved toward the operator, it releases the roller tension from the platen, permitting removal or repositioning of the paper.

## **Paper Bail and Lever**

Moving the bail away from the platen by using the bail lever permits insertion of paper. When forward, the bail holds the paper against the platen.

## **Line Space Lever**

This lever controls vertical line spacing of the platen for either single or double spacing.

## **Multiple-Copy Control Lever**

This lever provides for adjusting the print element to platen clearance for best printing results with single- or multiple-copy forms. Set this lever to the first mark for no-carbon forms, to the second mark for three-carbon forms, and to the third mark for five-carbon forms.

## **Platen Variable**

Pressing the left platen knob inward permits the platen to be rotated freely. This should be used to adjust the printing line as well as to relocate a line when reinserting a sheet.

## **Ribbon-Reverse Lever**

This lever permits the operator to reverse the direction of the ribbon before reaching the end of the ribbon. The ribbon automatically reverses when either end is reached. The lever is black and is located directly below the center of the ribbon cartridge and slightly in front of it.

## **Ribbon-Position Lever**

This four-position lever (left to right) permits the ribbon to be positioned so that either the bottom (red), middle (red-black), or top (black) section of the ribbon is used. The fourth position (extreme right) is used for stencil operations. Periodic repositioning of this lever extends the life of the ribbon and permits the used portions of the ribbon to be re-inked. This lever, which is black, is located directly below the left center of the ribbon cartridge and slightly in front of it.

## Ribbon-Change Lever

Moving this lever to the extreme right lifts the ribbon guide and permits easy removal of the ribbon and ribbon cartridge. This lever is black and is located directly below the right center of the ribbon cartridge and slightly in front of it.

## Ribbon Replacement

The IBM COMPAC Ribbon Cartridge permits clean ribbon-changing in a matter of seconds. To remove and replace a ribbon:

Turn on power switch and space the carrier to the center of the line.

Turn off power switch and lift top cover.

Move the ribbon change lever to the extreme right to raise the ribbon guide.

Lift the ribbon cartridge straight up and ease the ribbon out of the slots in the ribbon guide.

Rewind the excess ribbon by inserting a wooden pencil in either of the cartridge holes and turn in the direction of the arrow.

Position the new cartridge with the exposed ribbon facing the platen.

Slide the ribbon through the slots in the ribbon guide.

Position the cartridge on the cartridge posts and press into place.

To rewind excess ribbon, turn either cartridge post in the direction of the arrow.

Move the ribbon change lever to its extreme left position. This lowers the ribbon guide into the proper printing position.

## Platen Removal

To remove the platen for cleaning or changing:

Turn off the mainline switch.

Lift the top cover.

Move the paper release lever and the paper bail toward the operator.

Press the platen latches at both ends of the platen assembly and lift the platen out.

## Platen Replacement

To replace the platen:

Position the ratchet teeth to the right.

Center the end plate in the groove in the right end of the platen shaft.

Press the platen into position and check for a click when it locks.

## Cleaning the Print-Element

Two specially designed brushes are available from IBM for cleaning the 1053 Printer. To clean the print element:

With the print element in the lowercase position, turn off the mainline switch.

Remove the print element and clip it to the end of the dual-purpose brush.

Brush away from you and toward the top of the element, using the element brush.

Replace print element.

## **Print Element Replacement**

The removal and replacement of a printing element requires only seconds. To do this:

Check the printer to make sure that it is in lowercase shift. The arrow on the print element should point toward the platen.

Turn off the mainline switch.

Raise the top cover.

Squeeze the spring levers on the top of the print element.

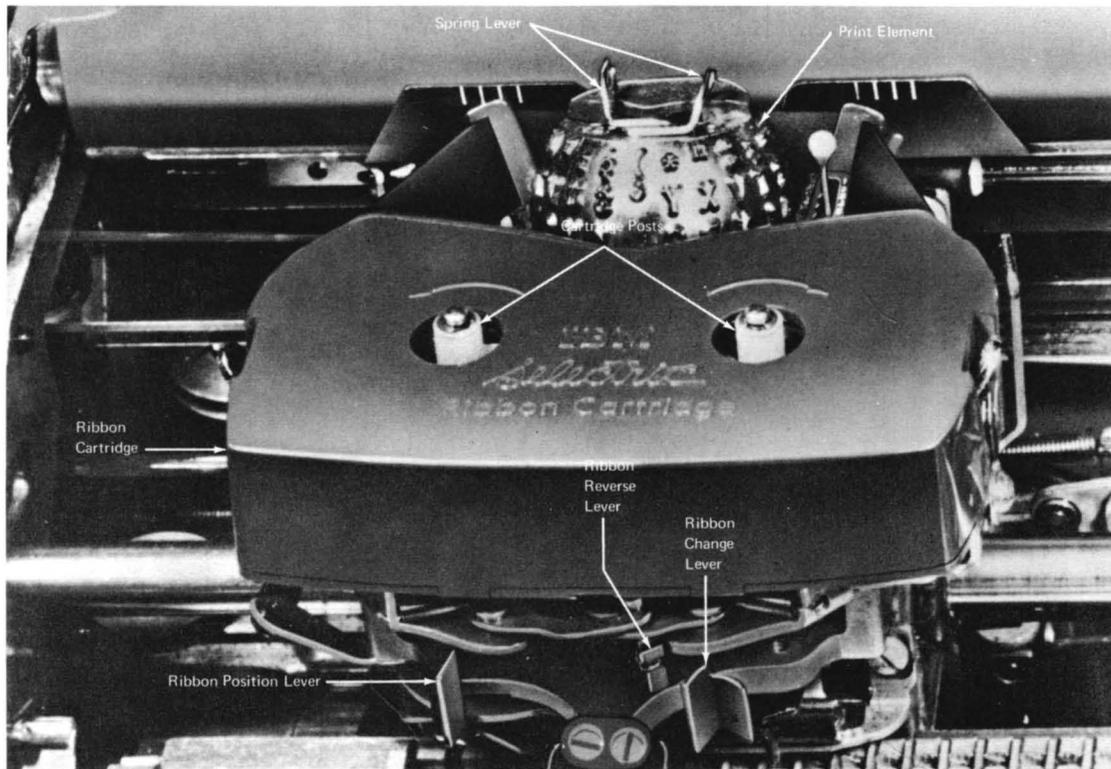
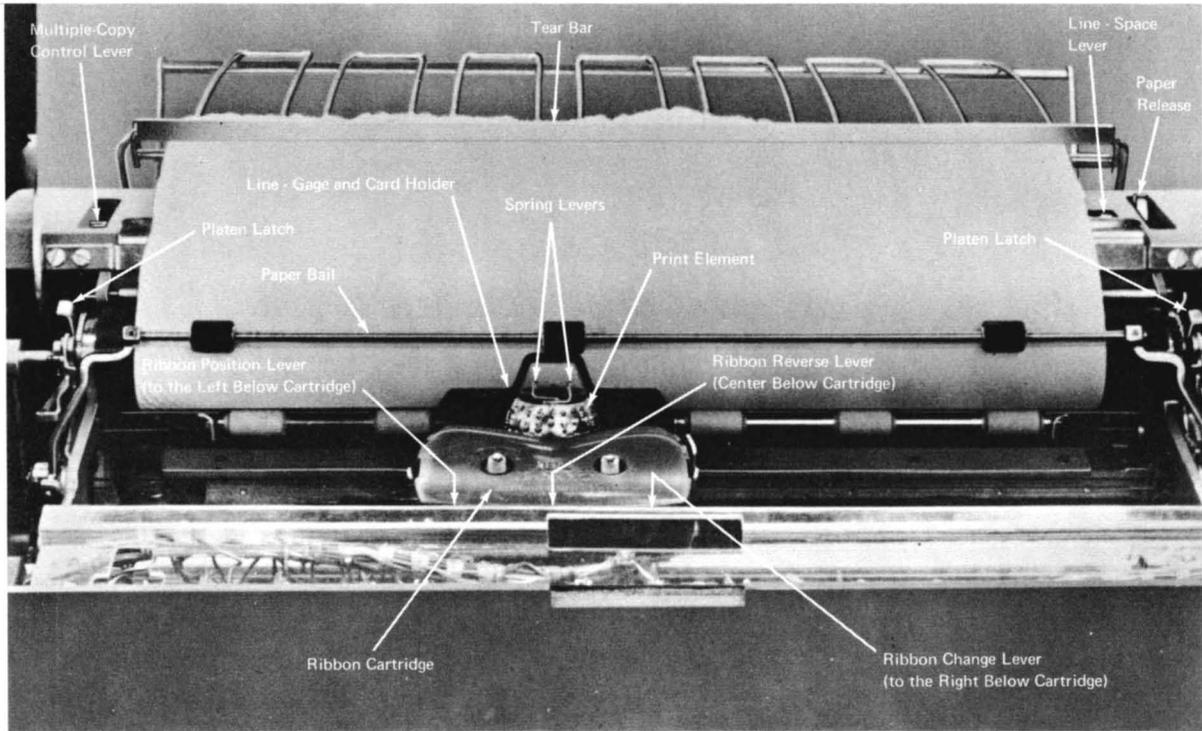
Lift the print element off the element post.

Squeeze the spring levers of the replacement element together firmly and place on the element post. The arrow on the element must point toward the platen.

Release the spring levers. The element is now locked in position for printing.

## **Interlocks**

The presence of paper is necessary to satisfy the interlock circuitry. Lack of paper is signaled by a contact approximately two inches from the print line. Printing is not interrupted by this action but continues until the message is completed. When paper has run out and the printer is requested again, the keyboard locks and no print request will be accepted.



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