

CENTRONICS

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MODEL 354-1,-2

OPERATORS MANUAL

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37403441-9A00

REV. A

JULY 1984

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OPERATORS MANUAL

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SION OF CENTRONICS DATA COMPUTER CORP.

SERVICING INFORMATION FOR YOUR PRINTER MAY BE
OBTAINED BY CALLING THE NUMBERS LISTED BELOW.
(ASK FOR FIELD ENGINEERING)



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data computer corporation
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Field Engineering Headquarters (603) 883-2492

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Western Region (Calif.): Tel. (714) 979-6650, TWX. 910-595-1925

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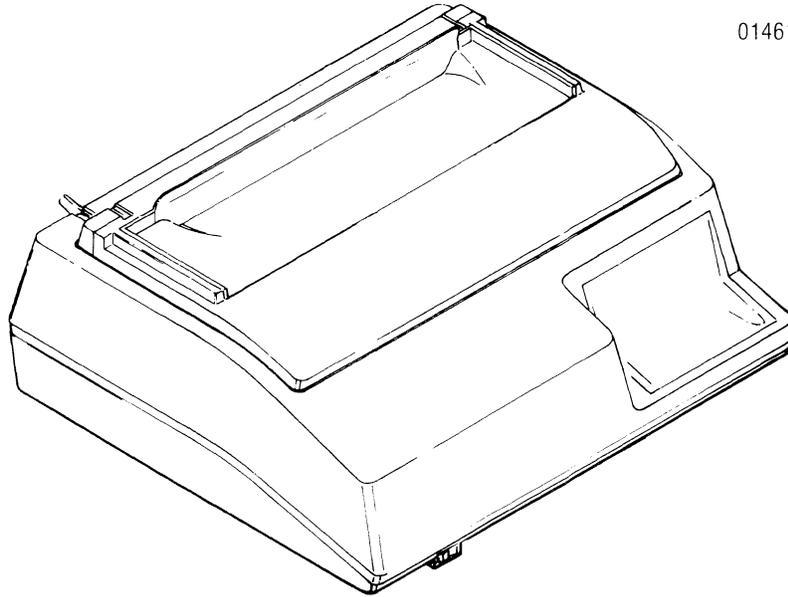
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- *Introduction*
- *Your Responsibilities*
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INTRODUCTION

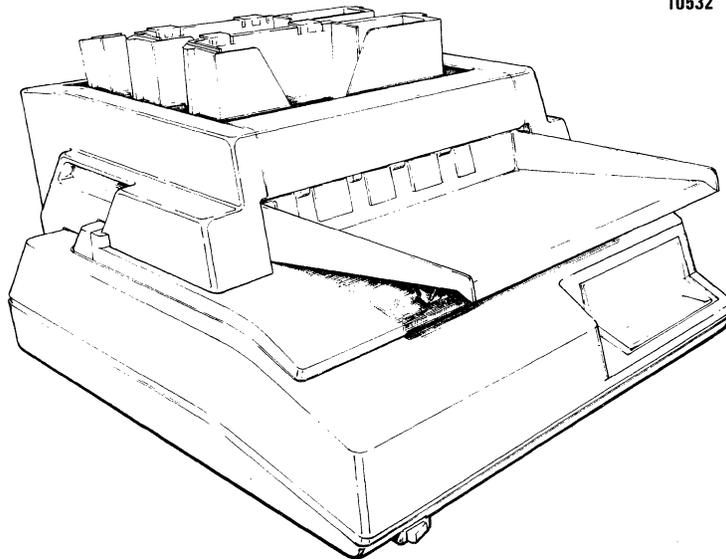
Your Centronics Model 354 printer is a commercial-grade, dot matrix printer capable of printing both text and graphics. The printer accepts fanfold forms or cut sheet forms. As many as six copies of forms can be printed at one time.

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An automatic three-bin cut sheet feeder can be used with the Model 354. The feeder permits rapid printing of cut sheet forms and/or envelopes.

10532



The procedures for setting up and connecting the printer are fairly simple. The information in this section will help you do both.

YOUR RESPONSIBILITIES

- Ensure a proper environment
- Prepare an adequate work area
- Maintain necessary supplies
- Provide an electrical outlet
- Unpack the printer
- Set up the printer

ENVIRONMENT

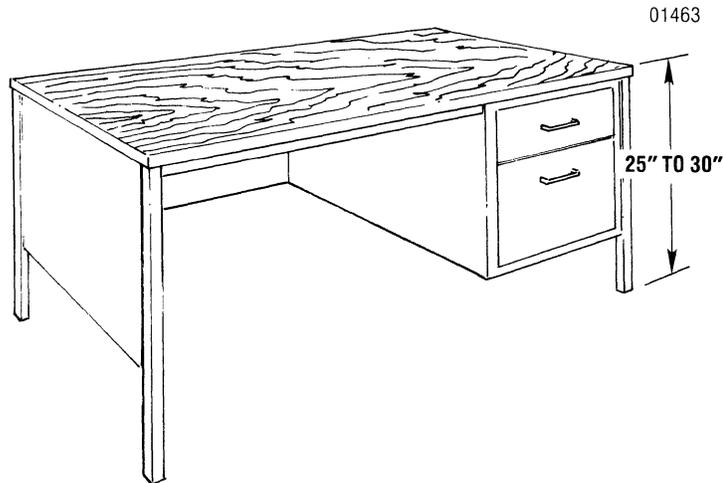
Set the printer up in a room which is free of airborne particles, smoke, or fumes. The temperature of the room should be kept between 50°F and 105°F (+10°C and +40°C).

If possible, set the printer up in a room where humidity can be controlled. Extremely dry or humid air may affect the feeding of forms.

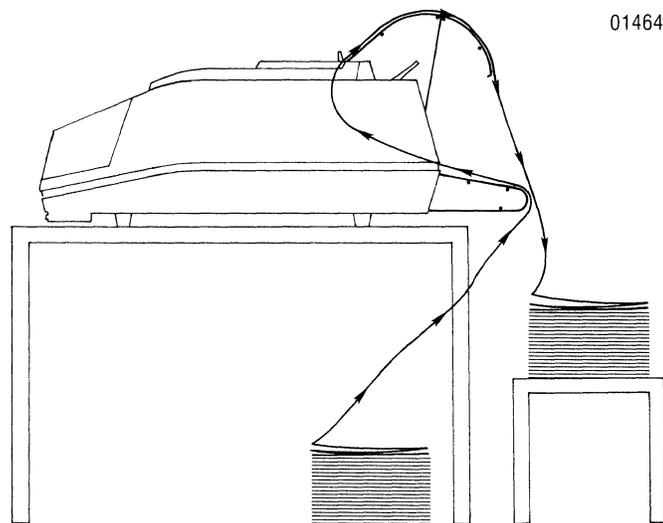
WORK AREA

You'll need a sturdy table or a printer stand to support your printer.

The surface of the support should be flat, be at least 36 inches wide and at least 24 inches deep. The recommended height of the surface above the floor is 25 to 30 inches.



You'll also need to provide a stand behind the printer table to receive printed forms as they leave the printer. Unprinted forms are usually left in the opened shipping carton, which is positioned under the table.



Your printer is 22.5 inches wide, 18.25 inches deep, and 7.5 inches high, excluding racks. The overall height of the printer with sheet feeder attached is 14 inches. Be sure the surface of the work station is large enough to accommodate the printer and the supplies and materials you'll use while operating the printer.

SUPPLIES

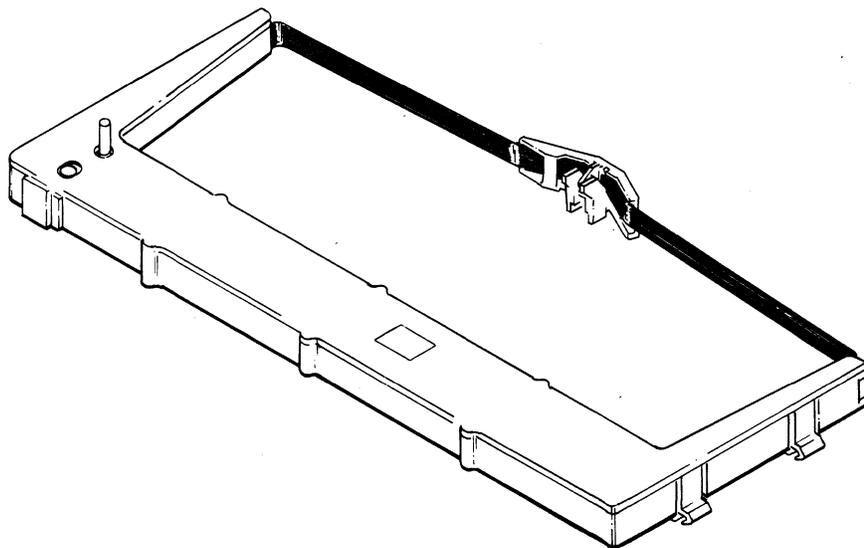
Order paper and extra ribbon cassettes as basic supplies.

Paper and Forms

Fanfold forms from 3.0 to 15.0 inches wide can be used. Single part form thickness should not exceed 0.010 inches. Multi-part form thickness should not exceed 0.0204 inches. Up to six-part forms can be used.

Cut sheet forms between 4.0 and 12.0 inches wide and 3.0 and 15.5 inches long can be used. Single part form weight should be at least 20 lb.

Ribbon Cassettes



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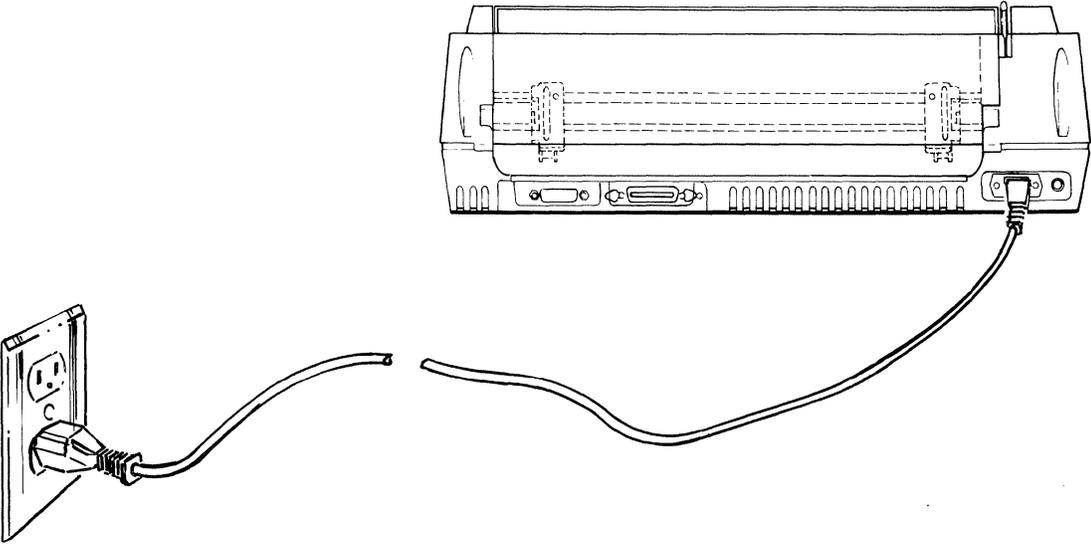
The printer is shipped with one (1) ribbon cassette. Extra cassettes can be purchased at (or through) Centronics Walk-in Centers listed in the last section of this manual.

ELECTRICAL

Provide an electrical outlet with the proper voltage/amperage ratings. The 115 volt version of the printer is fused for 4 amps; the 220 volt version for 2 amps.

An eight (8) foot power cord is included with the printer. Connect the cord between the outlet and the back of the printer. Leave some slack in the cord.

01465



CAUTION
To ensure your own safety and proper operation of the printer, BE SURE THE PRINTER ELECTRICAL CIRCUIT IS PROPERLY GROUNDED.

SAFETY

The printer weighs approximately 46 pounds. Use two people to lift or move the printer.

OPTIONS/ACCESSORIES

Centronics offers a wide variety of options and accessories for the Model 354 printer.

If you would like to expand the capabilities of your printer or add accessories which will ease operation, consider purchasing one or more of the options and accessories which are listed on an order form at the back of this manual.

Purchase orders for the options and accessories should be forwarded to:

Centronics Data Computer Corp.
Customer Service Department
1 Wall Street
Hudson, New Hampshire 03051

Options and accessories are also available at the Centronics Sales & Service Walk-in Centers.

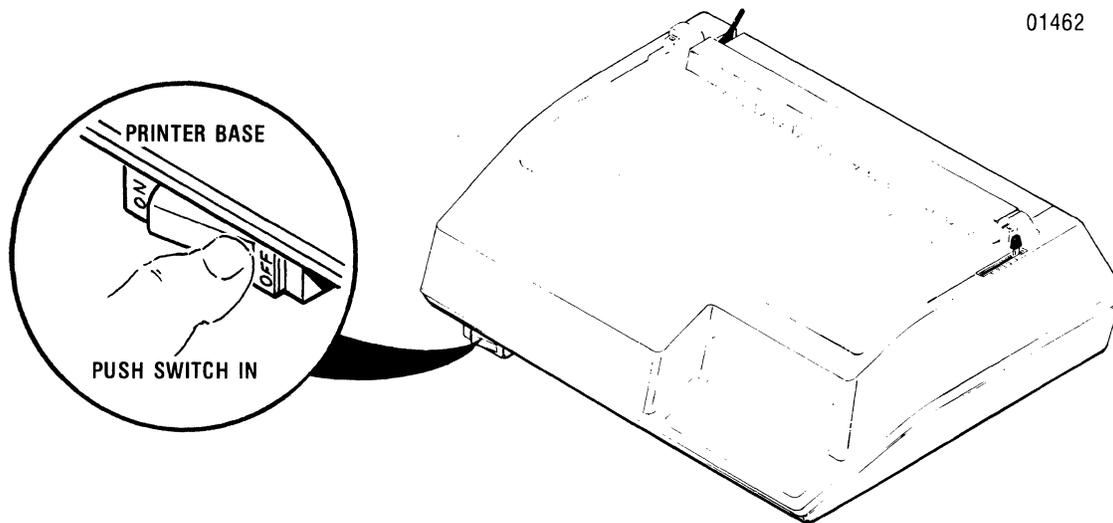
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- *Connecting the Printer*
- *Turning Power On*
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- *Loading Cut Sheet Forms*
- *Running Self Tests*

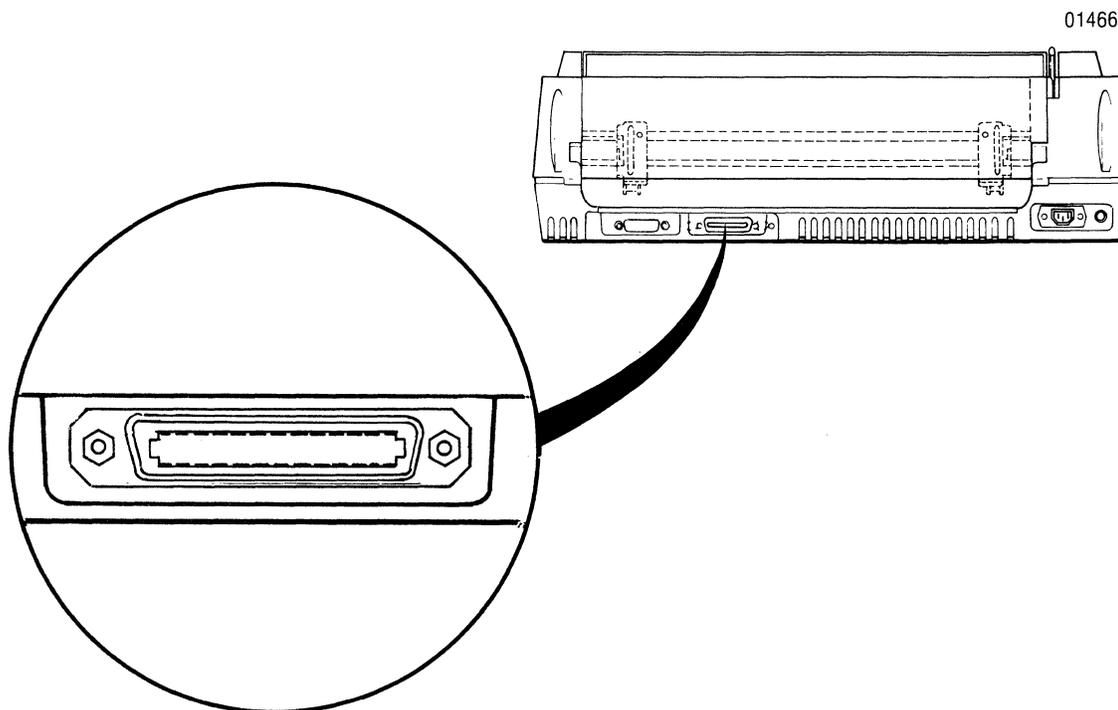
INSTALLATION

CONNECTING THE PRINTER

1. Push the power switch in to "OFF" position.

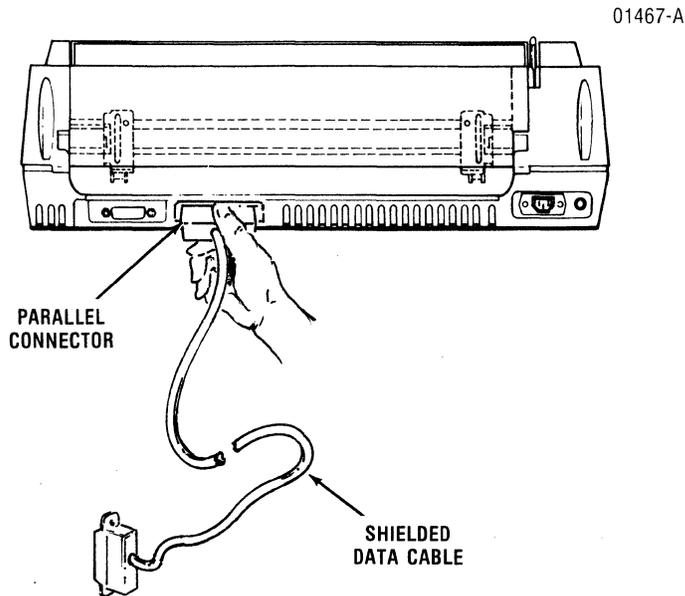


2. Locate the parallel interface connector, which is in the rear of the printer.

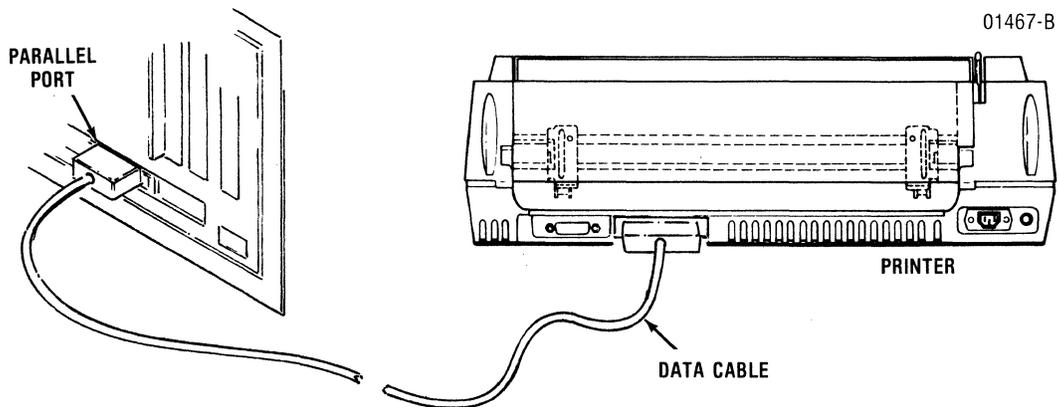


CONNECTING THE PRINTER (cont)

3. Plug one end of a shielded parallel data cable into the parallel cable connector at the back of the printer.

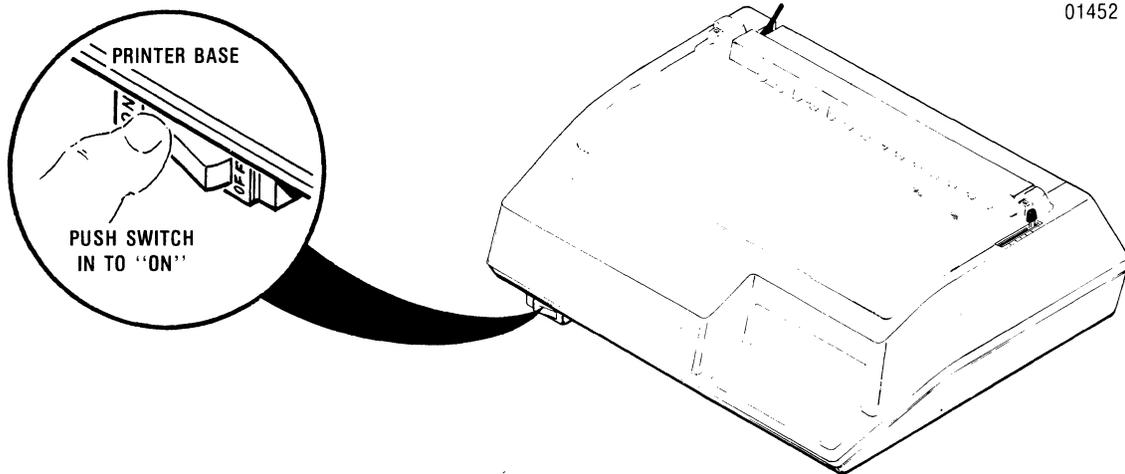


4. At the computer system, locate the parallel port to be used with the printer. Plug the other end of the shielded data cable into the port.



TURNING POWER ON

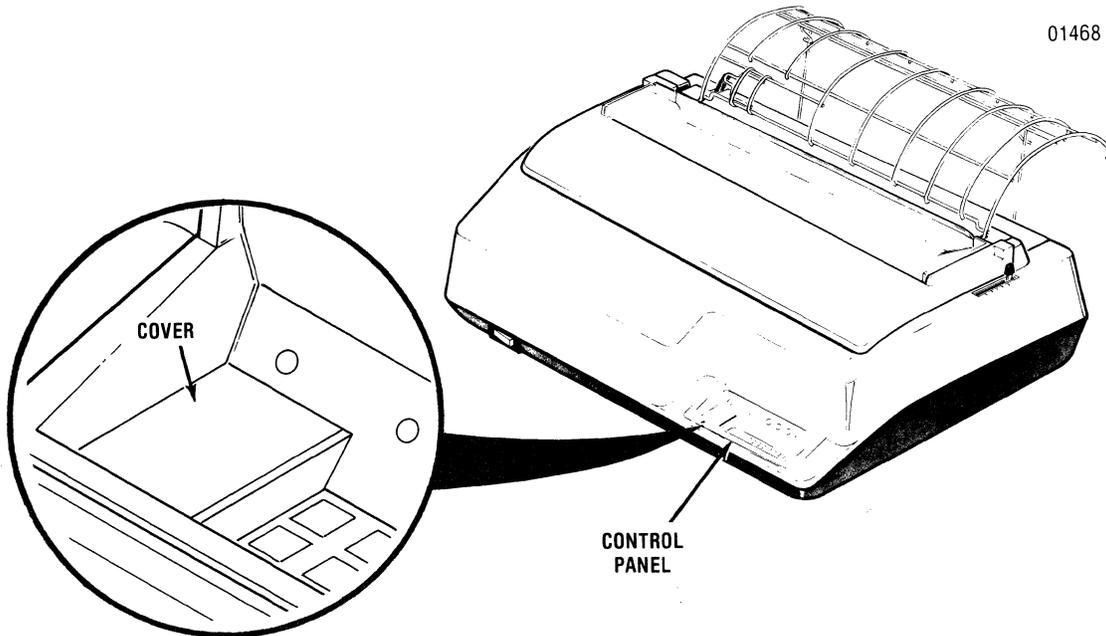
1. Locate the **ON/OFF** switch—it is near the front left corner of the printer base.
2. Push the power switch in to “**ON**” position. The **POWER** indicator lamp on the control panel will come on, showing the printer is “under power.”



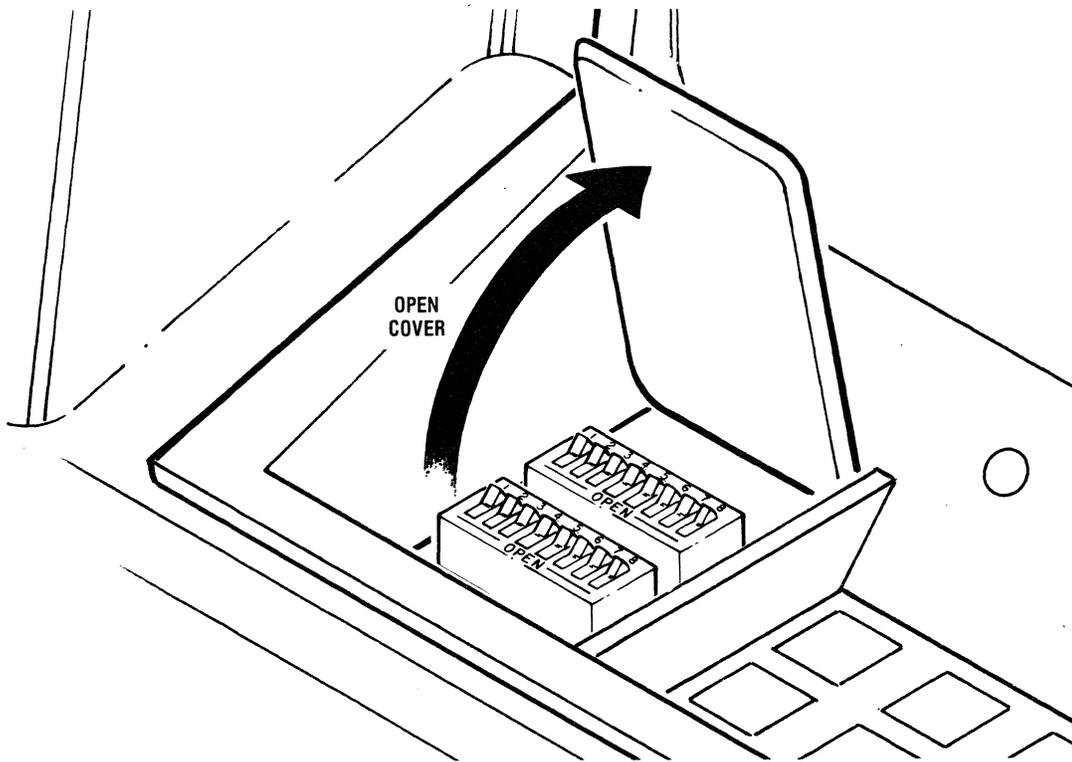
SETTING DIP SWITCHES

1. Locate the small cover on the left side of the control panel.

01468

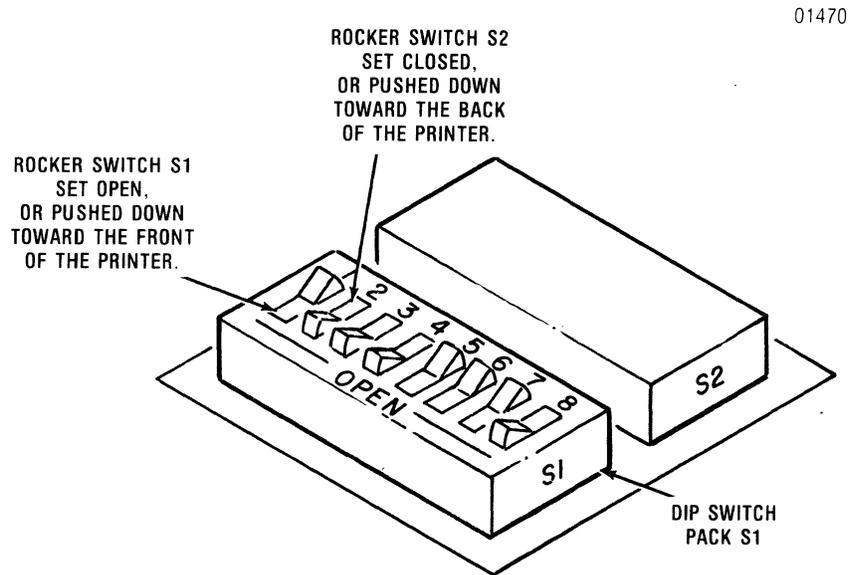


2. Open the cover and note the two DIP switch packs marked S1 (front) and S2 (back).



SETTING DIP SWITCHES (cont)

3. There are eight (8) small rocker switches on each DIP switch pack. The switches can be set to either of two positions, OPEN or CLOSED. The OPEN side of the switch packs is marked "OPEN"; the CLOSED side of the switch packs is marked with switch numbers. A switch is "set" when pushed down into OPEN or CLOSED position.



4. To set a rocker switch, push down on the "open" or "closed" side of the rocker until the switch snaps into position.

CAUTION

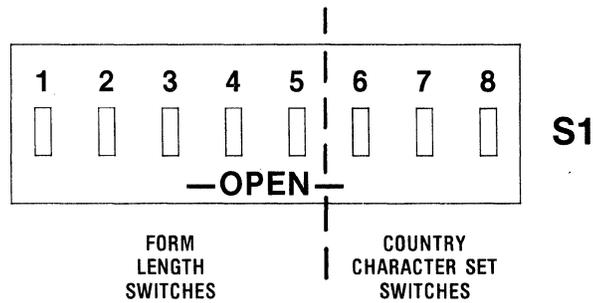
Do **NOT** use a lead pencil to set the rocker switches. Try a paper clip or small screwdriver.

SETTING DIP SWITCHES (cont)

5. The rocker switches on switch packs S1 and S2 are set to control the following printer functions and features:

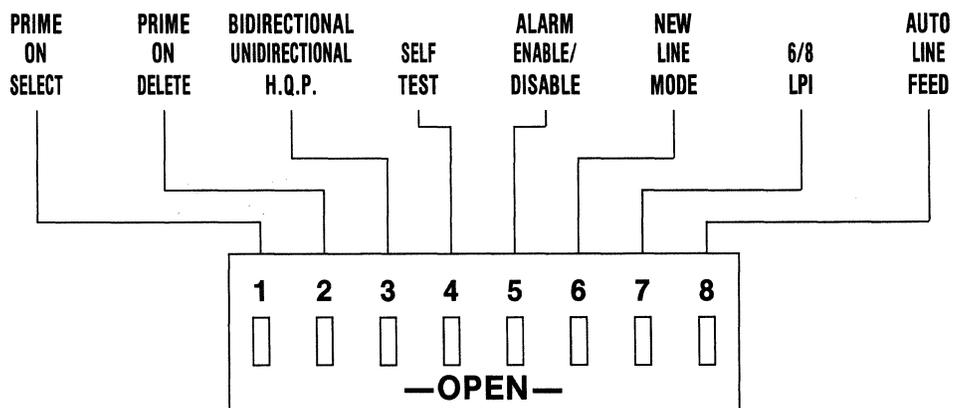
Switch Pack S1

- FORM LENGTH.....Switches 1-5
- COUNTRY CHARACTER SET.....Switches 6-8



Switch Pack S2

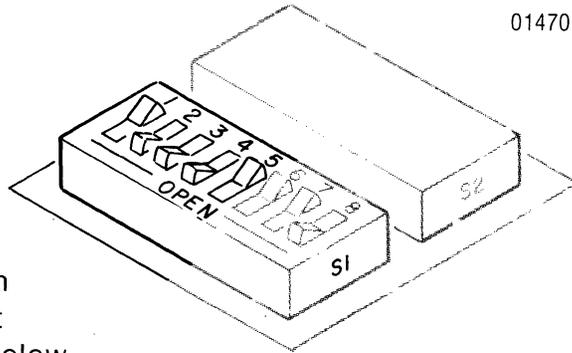
- PRIME ON SELECT.....Switch 1
- PRIME ON DELETE.....Switch 2
- UNIDIRECTIONAL/BIDIRECTIONAL HQP.....Switch 3
- SELF TEST.....Switch 4
- ALARM ENABLE/DISABLE.....Switch 3
- NEW LINE MODE.....Switch 6
- 6/8 LPI.....Switch 7
- AUTO LINE FEED.....Switch 8



SETTING DIP SWITCHES (cont)

Switch Pack S1

01470



Form Length Switch Settings—Rocker switches 1 through 5 can be set 32 ways to set up form lengths from 1/2" to 15 1/2", in 1/2" increments. Set the switches as show in the table below to establish the form length you need.

In this table, ○ = OPEN, X = CLOSED.

FORM LENGTH SWITCH SETTINGS											
SWITCHES					FORM LENGTH	SWITCHES					FORM LENGTH
1	2	3	4	5		1	2	3	4	5	
X	X	X	X	X	1 line feed	X	X	X	X	○	8 inches
○	X	X	X	X	1/2 inch	○	X	X	X	○	8 1/2 inches
X	○	X	X	X	1 inch	X	○	X	X	○	9 inches
○	○	X	X	X	1 1/2 inches	○	○	X	X	○	9 1/2 inches
X	X	○	X	X	2 inches	X	X	○	X	○	10 inches
○	X	○	X	X	2 1/2 inches	○	X	○	X	○	10 1/2 inches
X	○	○	X	X	3 inches	X	○	○	X	○	11 inches
○	○	○	X	X	3 1/2 inches	○	○	○	X	○	11 1/2 inches
X	X	X	○	X	4 inches	X	X	X	○	○	12 inches
○	X	X	○	X	4 1/2 inches	○	X	X	○	○	12 1/2 inches
X	○	X	○	X	5 inches	X	○	X	○	○	13 inches
○	○	X	○	X	5 1/2 inches	○	○	X	○	○	13 1/2 inches
X	X	○	○	X	6 inches	X	X	○	○	○	14 inches
○	X	○	○	X	6 1/2 inches	○	X	○	○	○	14 1/2 inches
X	○	○	○	X	7 inches	X	○	○	○	○	15 inches
○	○	○	○	X	7 1/2 inches	○	○	○	○	○	15 1/2 inches

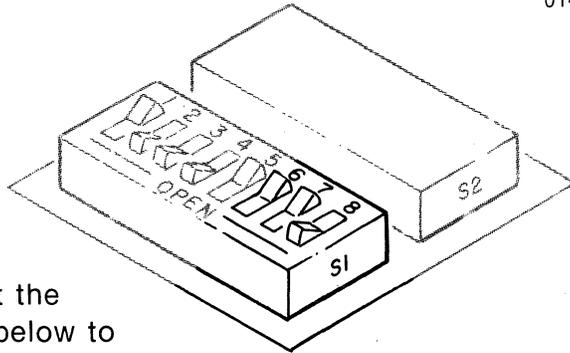
SETTING DIP SWITCHES (cont)

Switch Pack S1

01470

Country Character Set Switch Settings

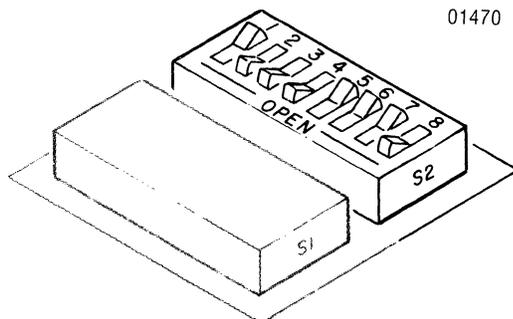
—Rocker switches 6, 7, and 8 can be set 8 ways to select any of the 8 country character sets. Set the switches as shown in the table below to select the country character set you want.



In this table, ○ = OPEN, X = CLOSED.

COUNTRY CHARACTER SET SWITCH SETTINGS			
SWITCHES			COUNTRY CHARACTER SET
6	7	8	
X	X	X	USA
○	X	X	FRANCE
X	○	X	UNITED KINGDOM
○	○	X	GERMANY
X	X	○	ITALY
○	X	○	SWEDEN/FINLAND
X	○	○	DENMARK/NORWAY
○	○	○	SPAIN

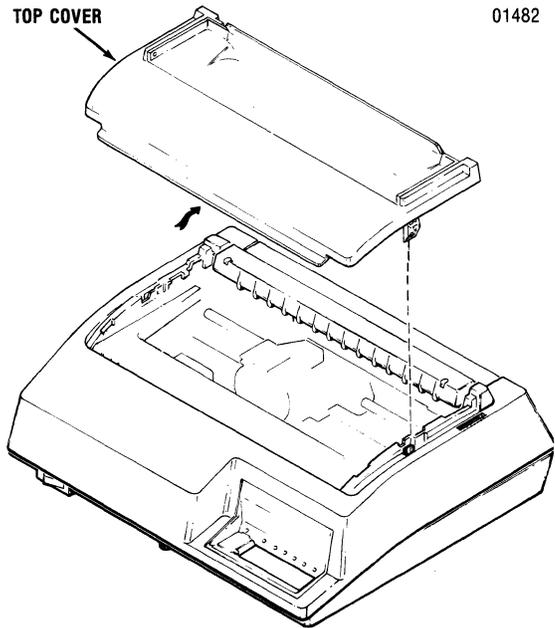
Switch Pack S2



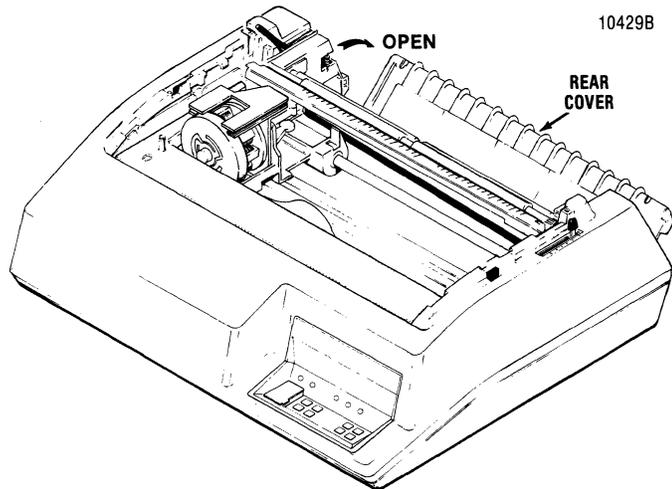
- #1 Prime on Select**—Set this switch “OPEN” to enable the Prime on Select function. This function causes the printer to clear its input buffer and to move the printhead to the extreme left each time the printer is selected via the control panel or via a select control code.
- #2 Prime on Delete**—Set this switch “OPEN” to enable the Prime on Delete function. This function causes the printer to clear its input buffer and to move the printhead to the extreme left each time the printer receives a **DELETE** control code.
- #3 Uni/Bidirectional HQP**—Set this switch “CLOSED” to select unidirectional (high resolution) high quality print; set the switch “OPEN” to select bidirectional (high speed) high quality print.
- #4 Self-Test**—Set this switch “OPEN” to set the printer up to perform the self-test described in the **INSTALLATION** section of this manual. Set the switch “CLOSED” to disable the self-test function.
- #5 Alarm Enable/Disable**—Set this switch “CLOSED” to enable the audio alarm; set the switch “OPEN” to disable the audio alarm.
- #6 New Line Mode**—Set the switch “OPEN” to enable the **NEW LINE MODE** feature. This feature causes the printer to perform a line feed and to return the printhead to the left each time a paper motion control code is received. Set the switch “CLOSED” to disable the function.
- #7 6/8 LPI**—Set this switch “CLOSED” to set the printer to default to 6 lpi at power up; set the switch “OPEN” to set the printer to default to 8 lpi at power up.
- #8 Auto Line Feed**—Set this switch “OPEN” to enable the automatic line feed feature. This feature causes the printer to perform an automatic line feed each time it receives a CR control code. Set this switch “CLOSED” to disable the feature.

INSTALLING THE RIBBON CASSETTE

1. Lift the top cover up and off the printer.

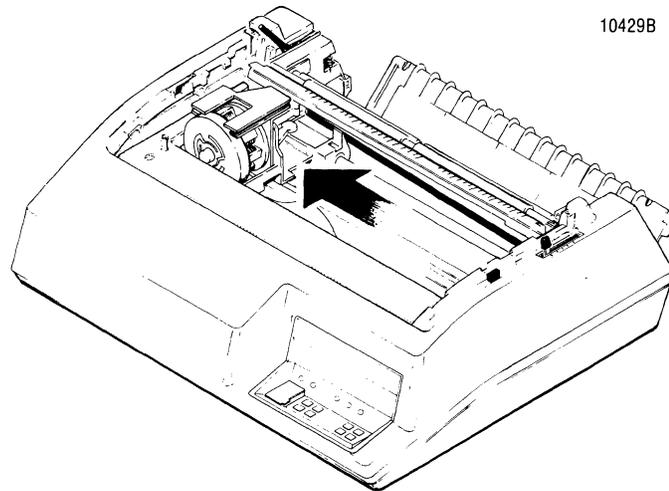


2. Unsnap the rear cover and place in the open position.

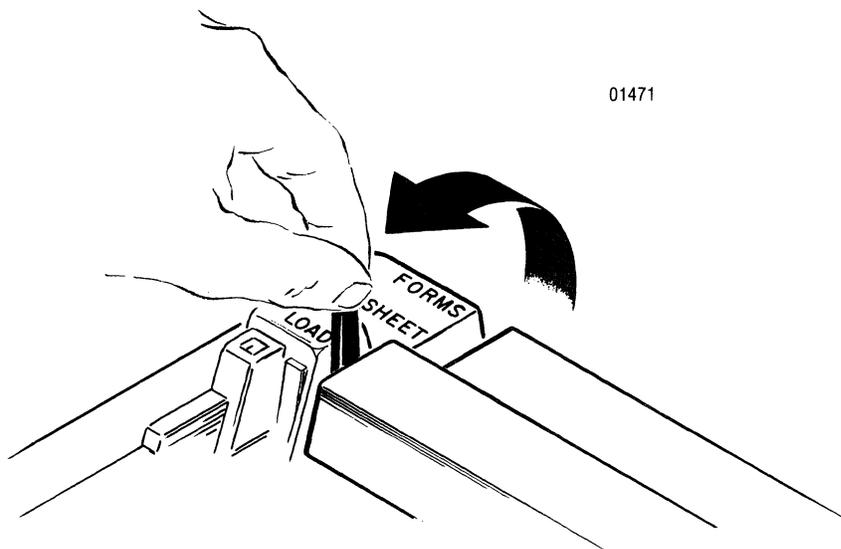


INSTALLING THE RIBBON CASSETTE (cont)

3. Move the printhead to the far left.

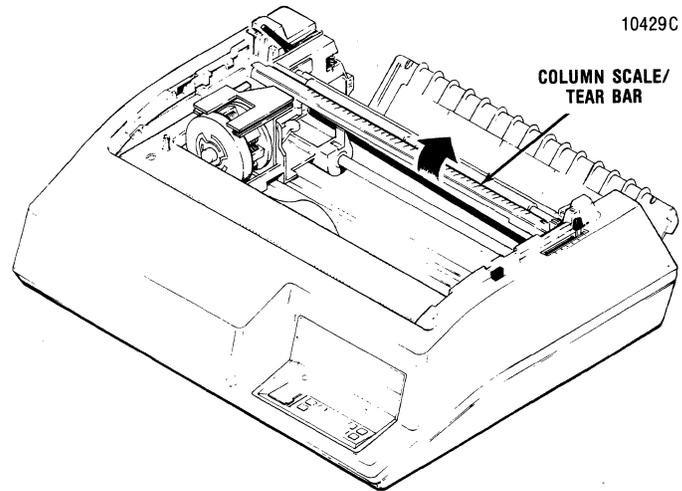


4. Place the forms lever in the "LOAD" position.

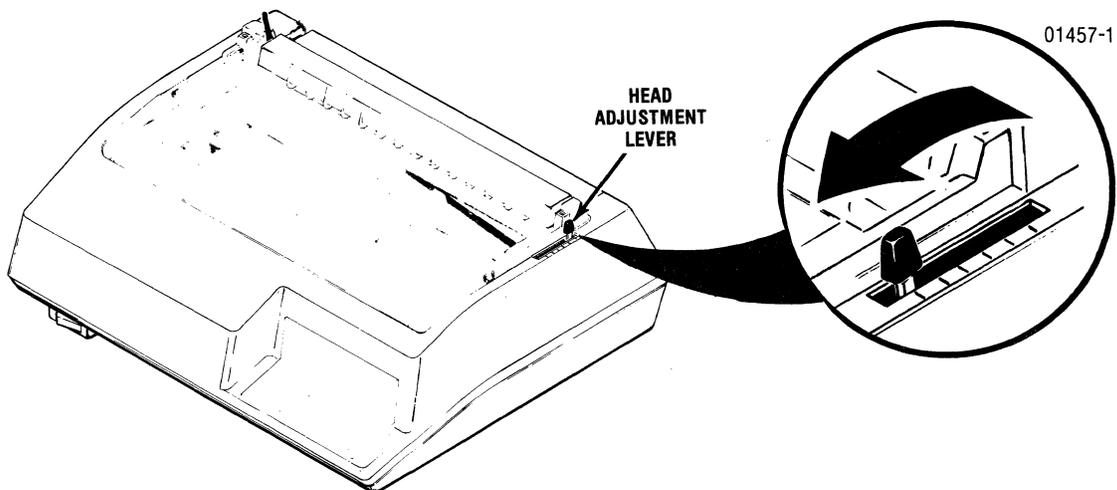


INSTALLING THE RIBBON CASSETTE (cont)

5. Lift the column scale bar up until it locks into "UP" position.

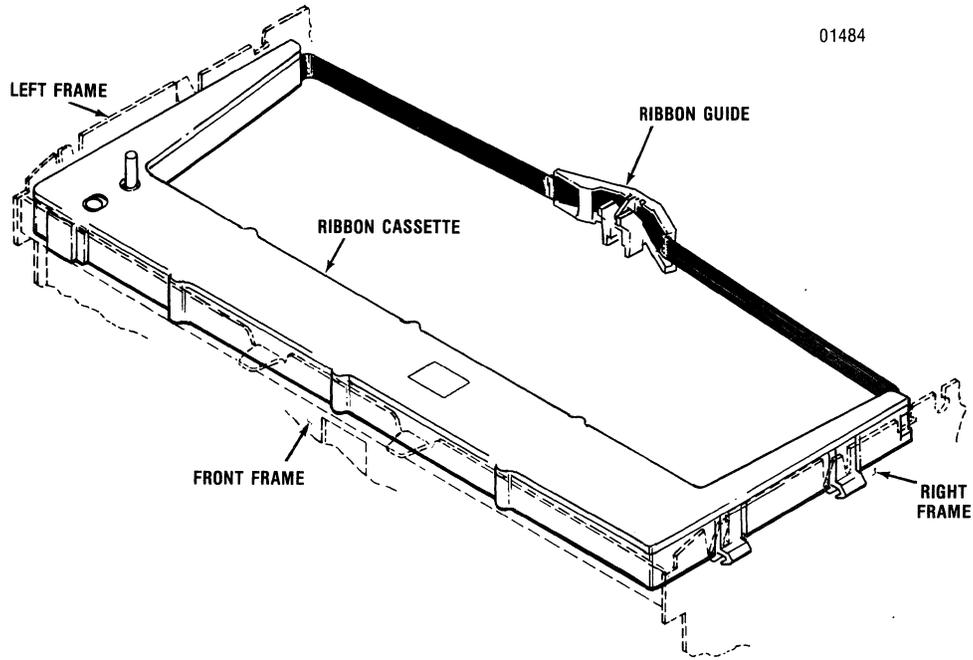


6. Pull the head adjustment lever toward the front of the printer.

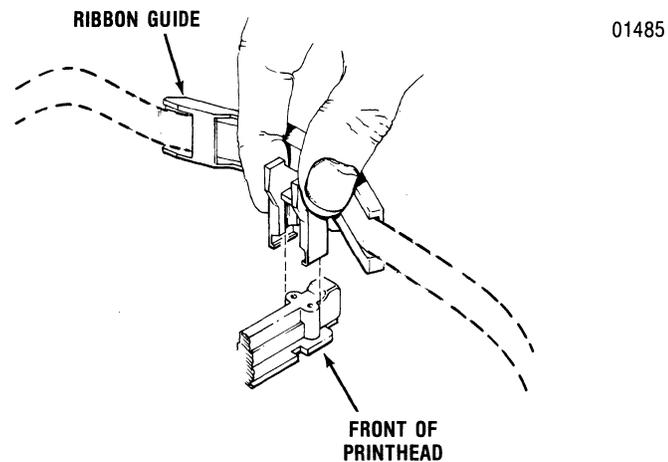


INSTALLING THE RIBBON CASSETTE (cont)

7. Push the new cassette into place, snapping the cassette retaining tabs into slots in the side frames.

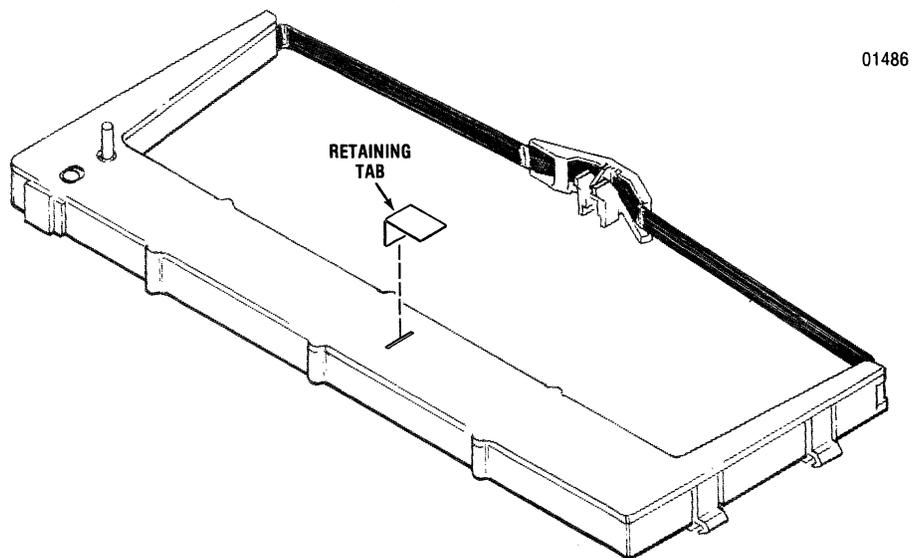


8. Install the new ribbon guide by squeezing together the two tabs at the top of the guide and pushing the guide down onto the front of the printhead.

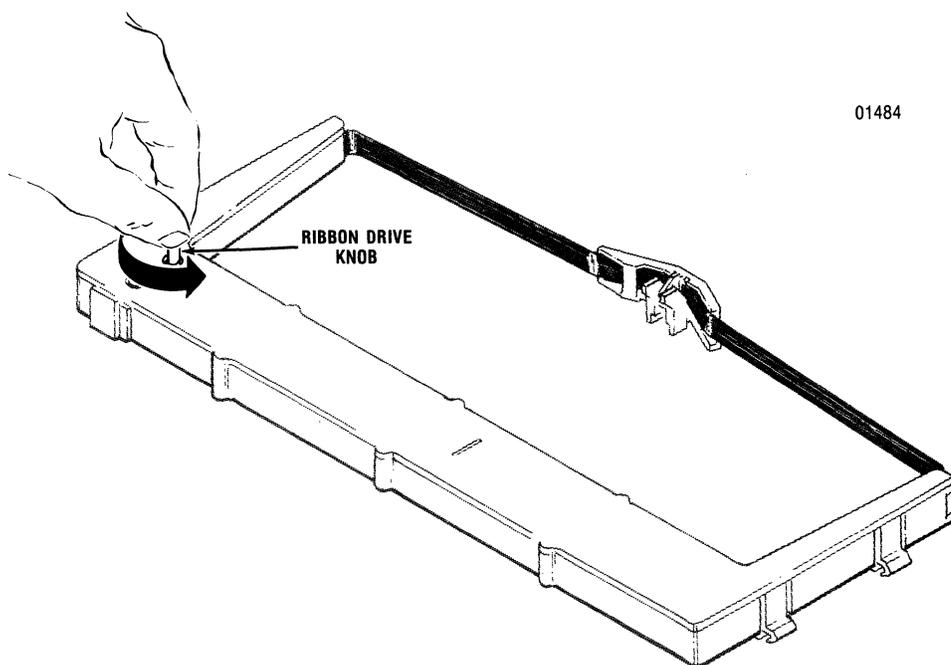


INSTALLING THE RIBBON CASSETTE (cont)

9. Remove the small retaining tab from the top of the ribbon cassette.

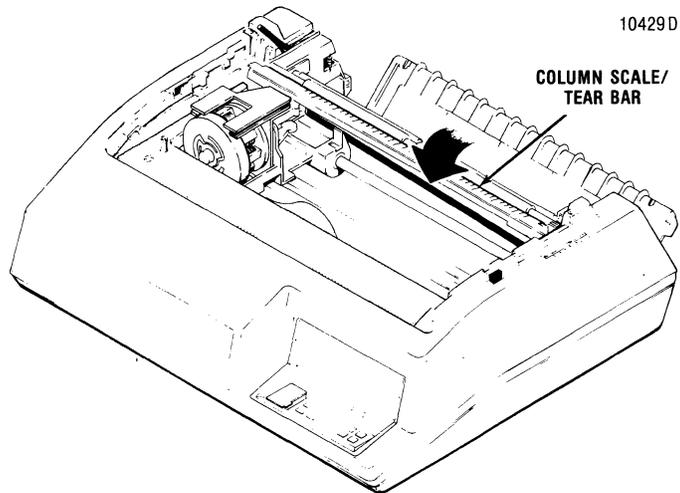


10. Rotate the ribbon drive knob counterclockwise several turns to ensure the ribbon is feeding properly.

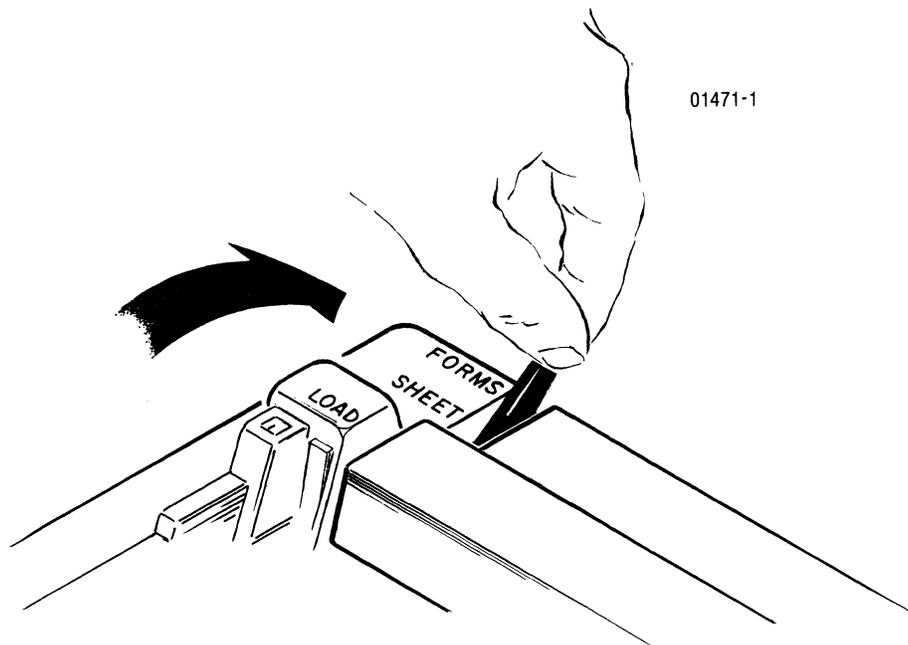


INSTALLING THE RIBBON CASSETTE (cont)

11. Lower the column scale bar.

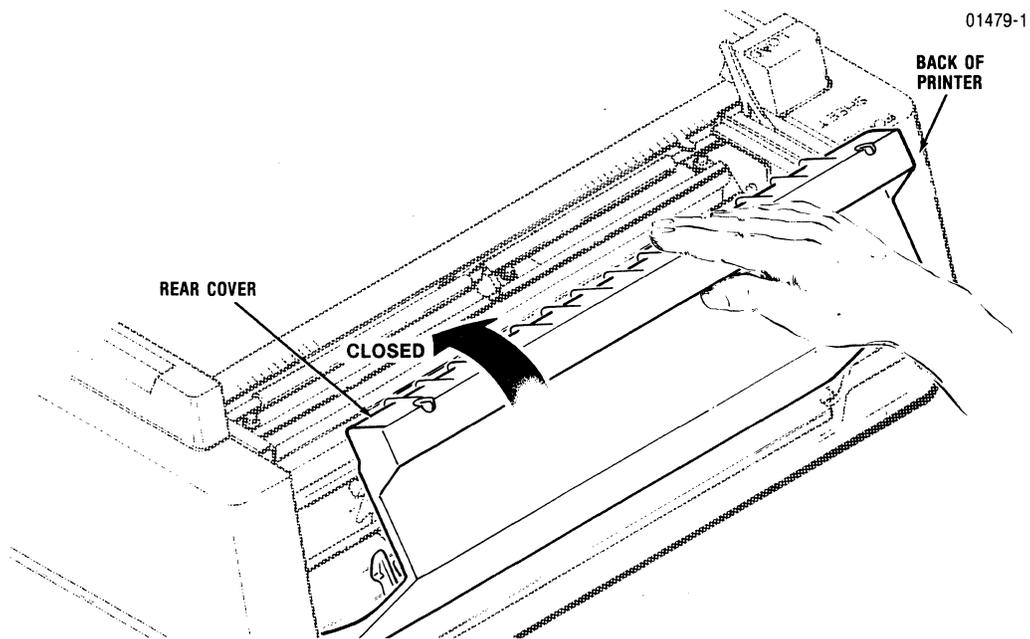


12. Place the forms lever to "SHEET" or "FORMS" position, depending on the type form to be printed.

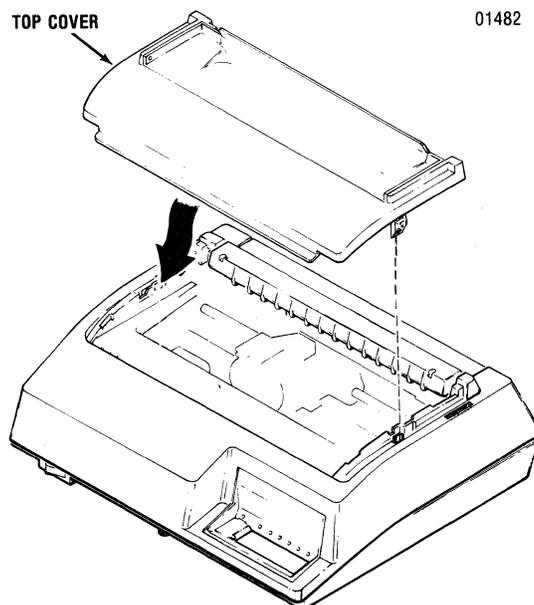


INSTALLING THE RIBBON CASSETTE (cont)

13. Snap shut the rear cover.

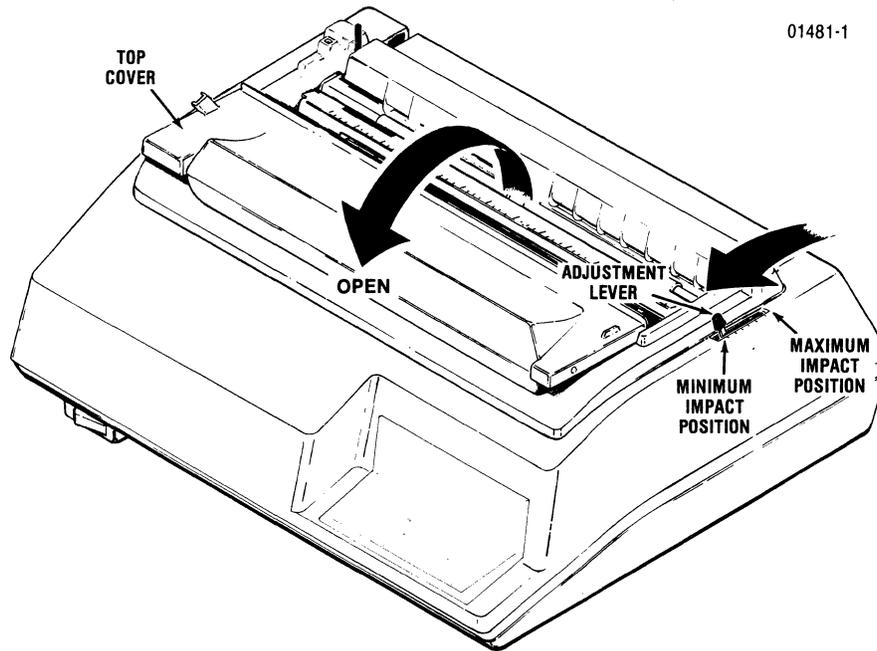


14. Guide the front lip of the top cover under the body cover, then press the cover down until it snaps into place. Installation is now complete.

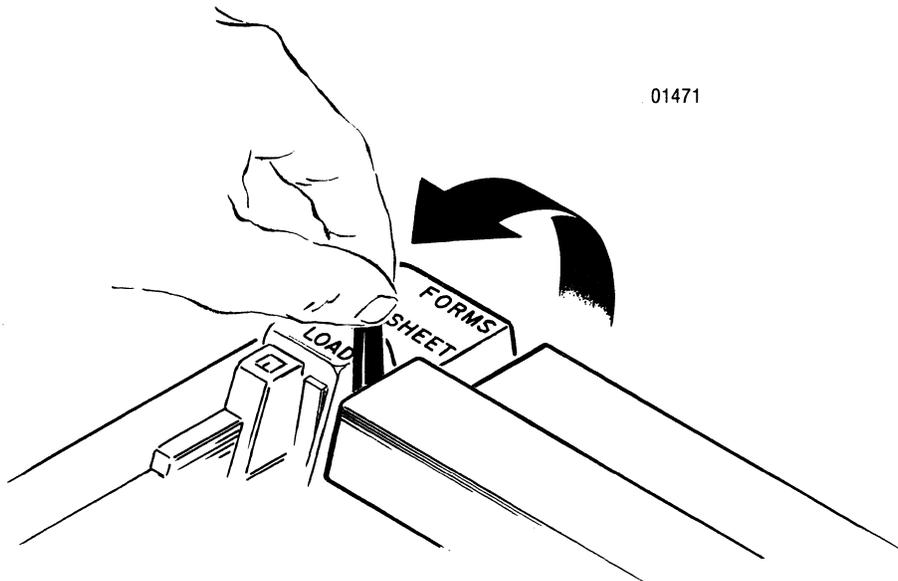


LOADING FANFOLD PAPER

1. Position the head adjustment lever to minimum impact position (toward front of printer).

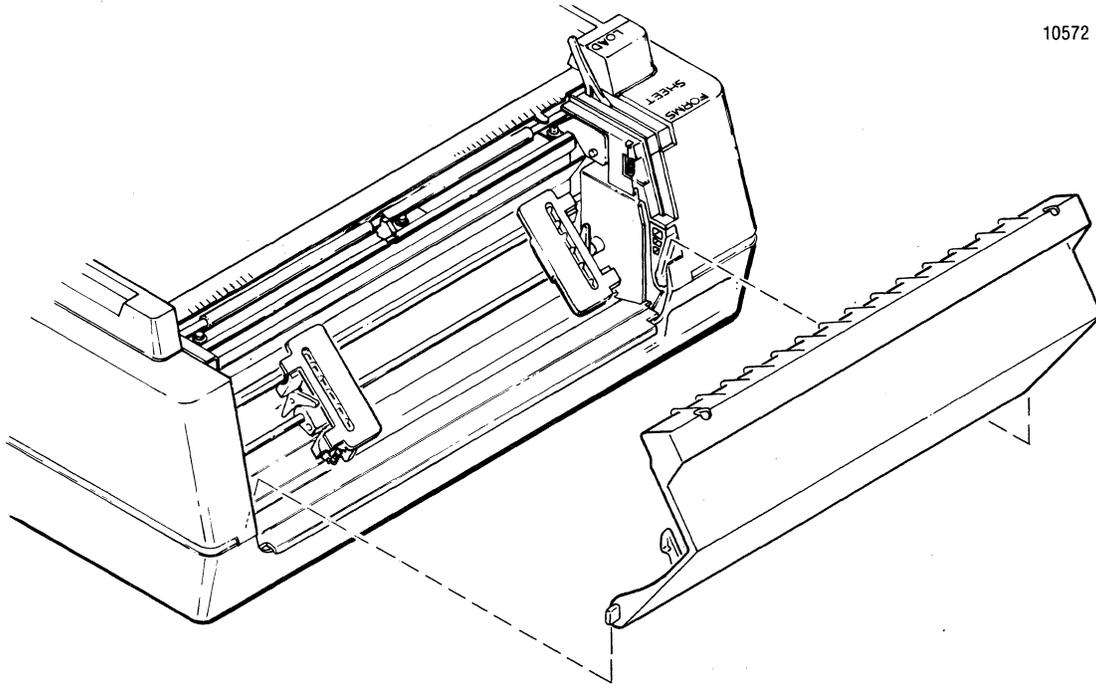


2. Open the smoked window cover.
3. Move the printhead to the far left and set the forms lever to the "LOAD" position.

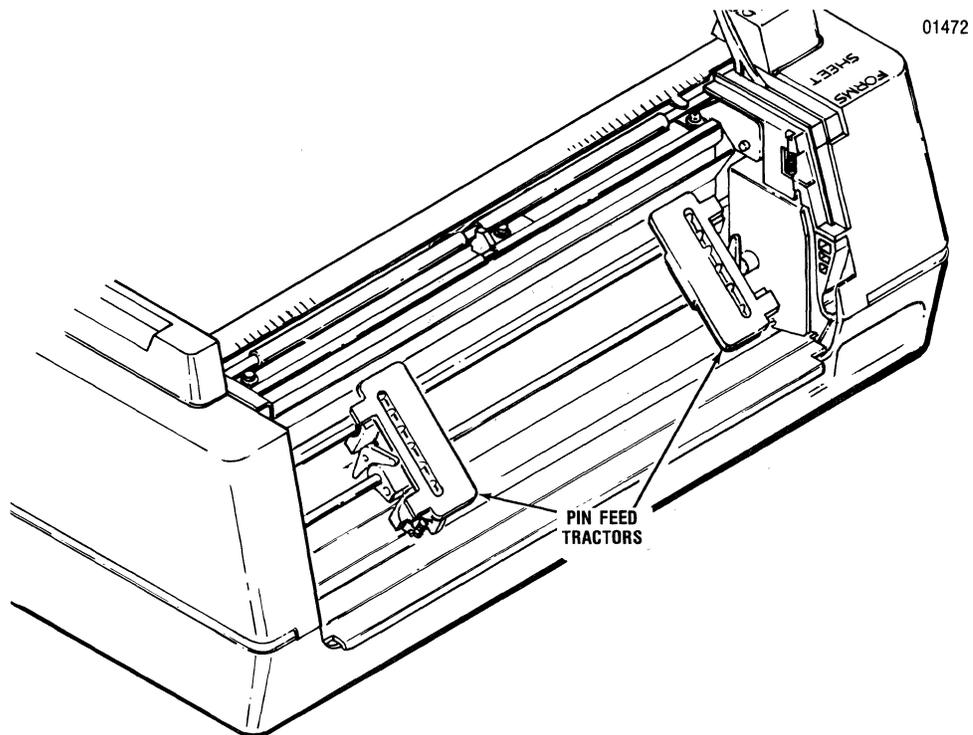


LOADING FANFOLD PAPER (cont)

4. Remove the rear cover by unsnapping and then lifting the cover away from the printer.

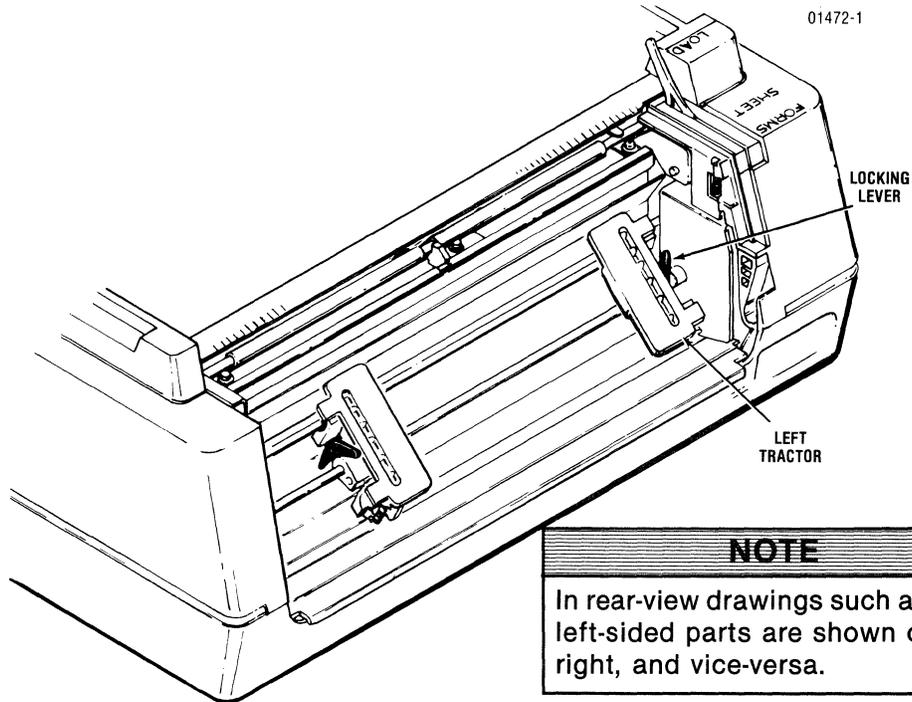


5. Locate the left and right pin feed tractors.

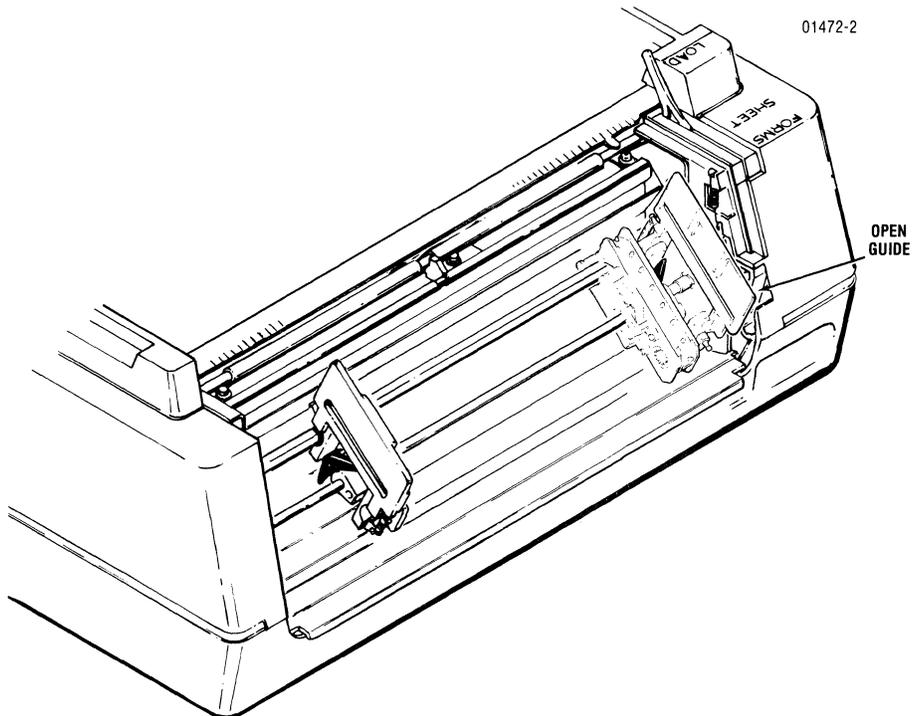


LOADING FANFOLD PAPER (cont)

6. Loosen the left pin feed tractor locking lever and slide the tractor to the far left, then tighten the lever to lock the tractor in place.

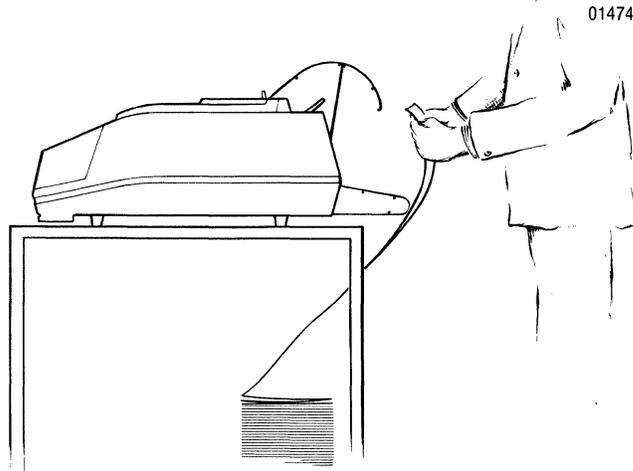


7. Open the paper guides on the left and right pin feed tractors.

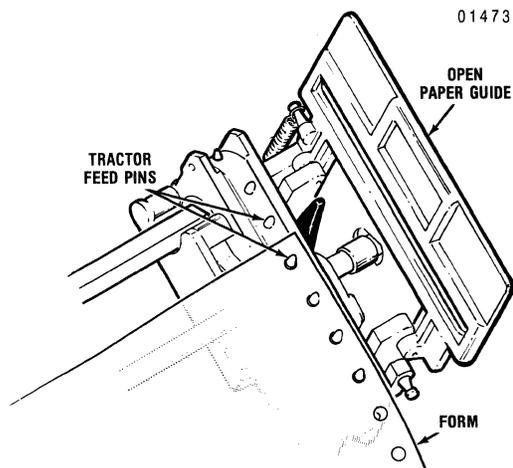


LOADING FANFOLD PAPER (cont)

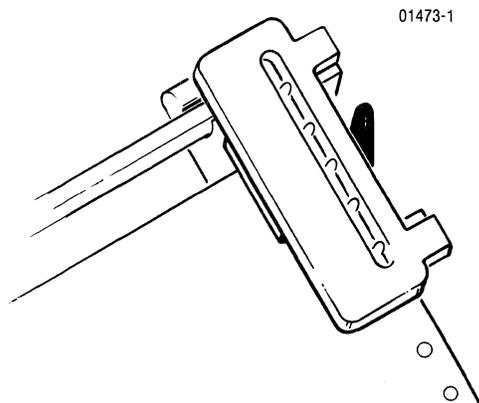
8. Position a stack of forms beneath the printer and guide the top form of the stack up to the back of the printer.



9. Position the form on the left tractor so that the tractor pins pass through the feed holes along the edge of the form.

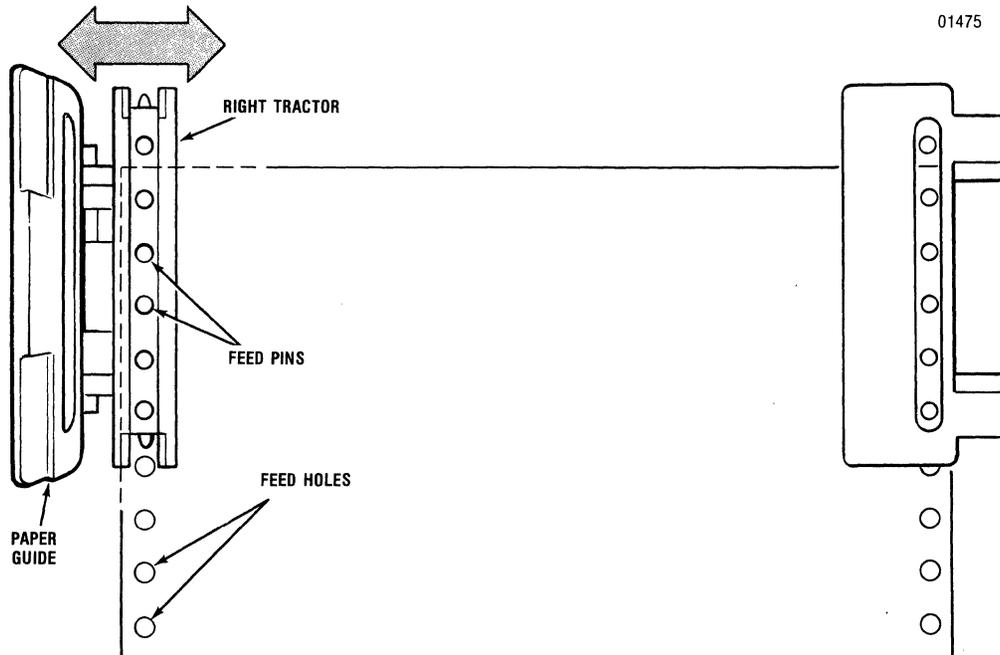


10. Snap shut the open paper guide to lock the form in place in the tractor.

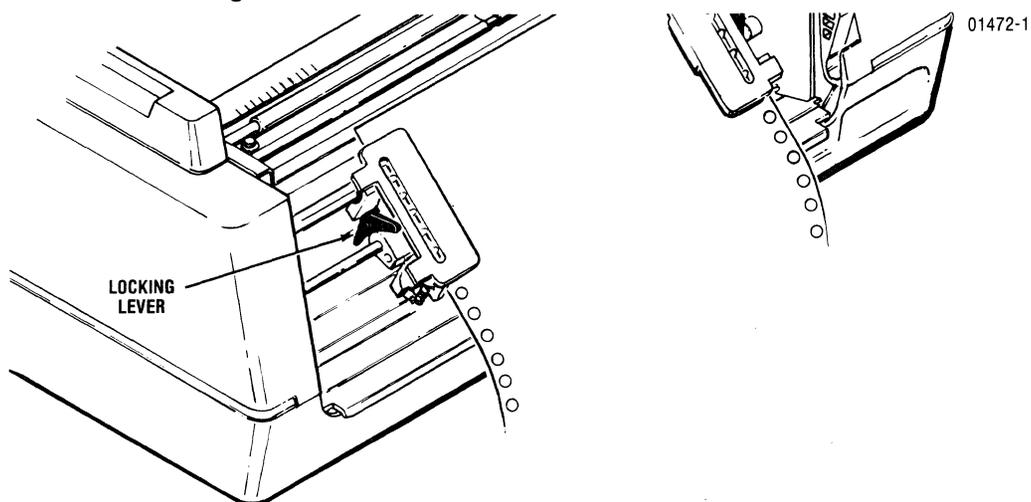


LOADING FANFOLD PAPER (cont)

- Slide the right tractor left or right until the tractor feed pins line up with the feed holes along the edge of the form.

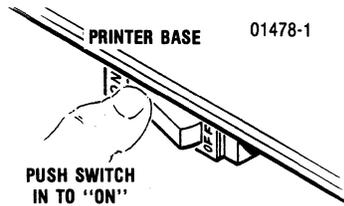


- Making sure the top edge of the form is level, position the form on the right tractor so that the tractor pins pass through the feed holes along the edge of the form.
- Snap shut the open paper guide to lock the form in place in the tractor.
- Lock the right tractor in place by pushing down on the bottom part of the tractor locking lever.

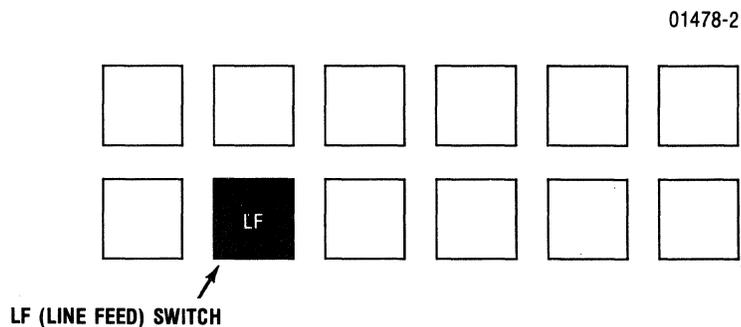


LOADING FANFOLD PAPER (cont)

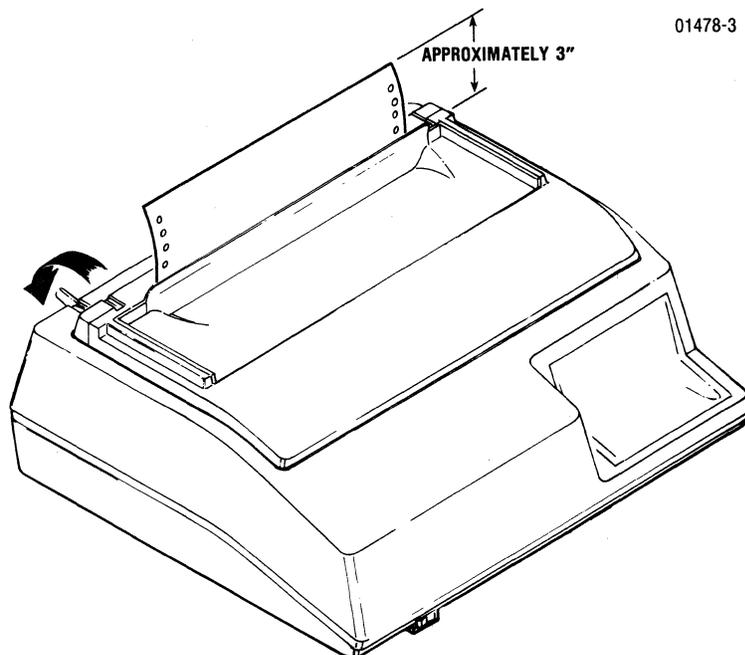
15. Close the smoked window cover.
16. Turn the power switch on by pressing on the "I-ON" side of the switch.



17. Press the LF switch on the control panel.



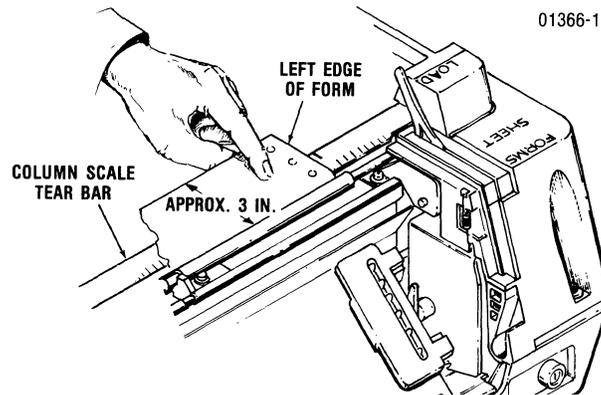
18. Keep the LF switch depressed until the top edge of the form is about 3" above the column scale tear bar.



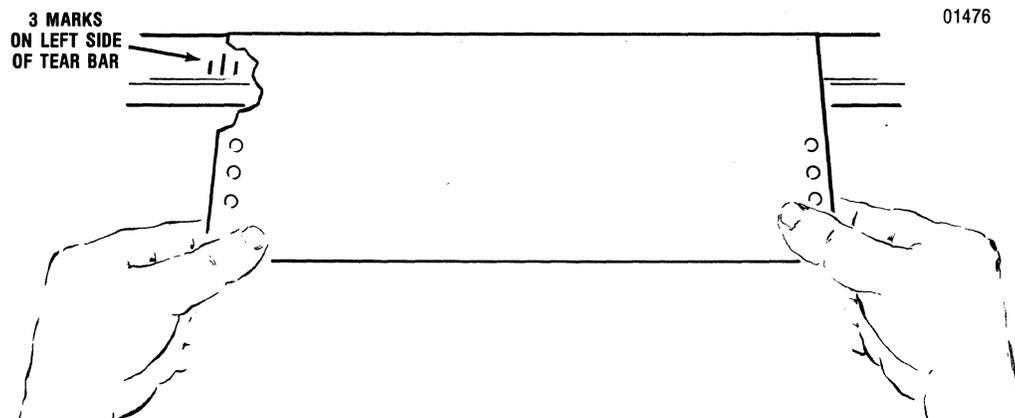
19. Move the forms lever all the way back to "FORMS" position.
 20. Open the smoked window cover.
-
-

LOADING FANFOLD PAPER (cont)

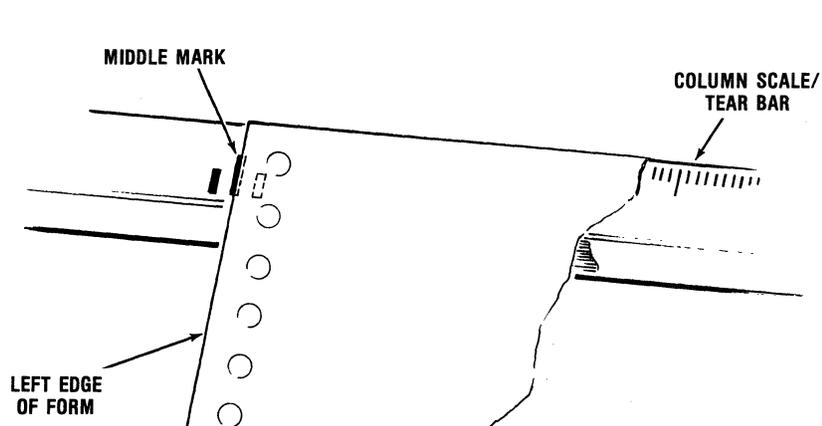
21. Gently pull the form across the column scale/tear bar.



22. Note how the left edge of your form aligns with the three marks on the left side of the column scale/tear bar.

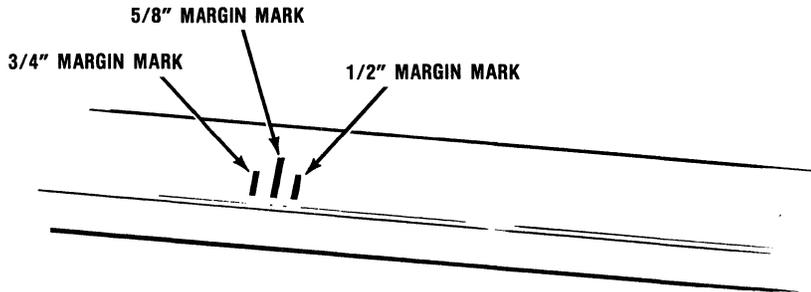


23. The three marks are used to adjust margin width. When the left edge of the form lines up with the middle mark on the bar, the left margin is 5/8" wide.



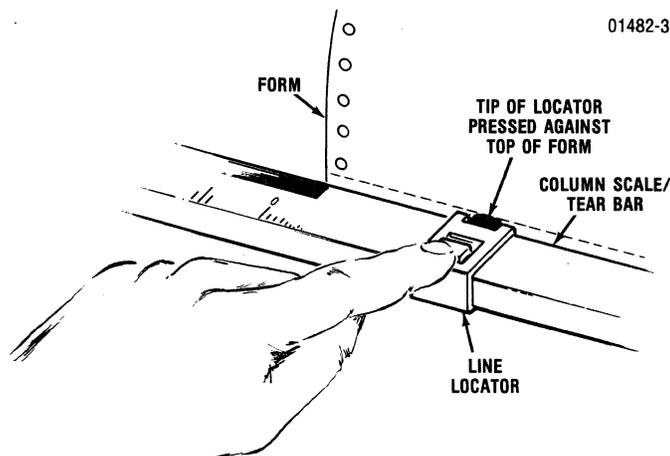
LOADING FANFOLD PAPER (cont)

24. The marks to the left and right of the center mark are off set by $1/10$ ". If the form lines up with the left most marks, your margin will be about $3/4$ " wide; if the form lines up with the right most mark, your margin will be about $1/2$ " wide.



01477-2

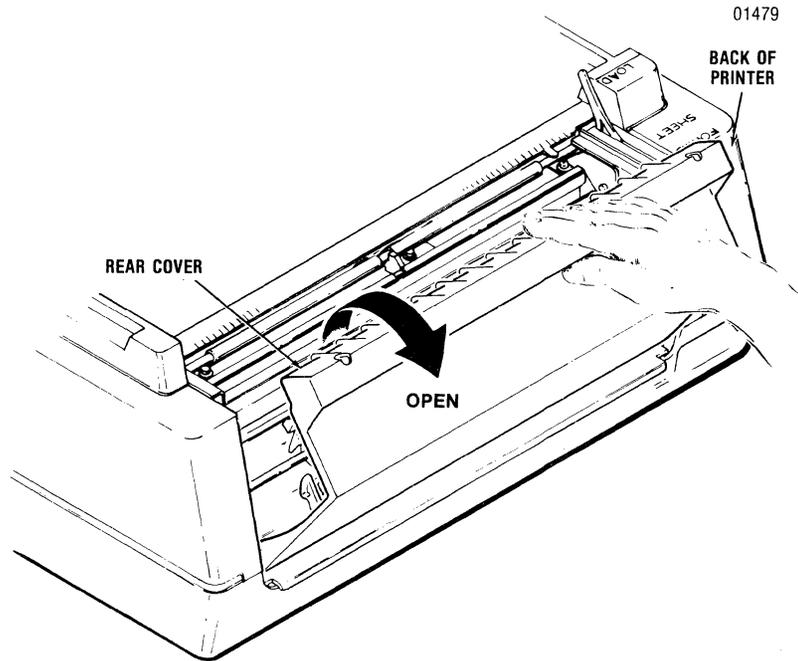
25. To set the margin width you need, open the rear cover again, release the locking levers on each of the tractors and move the pair of tractors in parallel until the edge of your form lines up with the required mark on the tear bar, then lock the tractors in place.
26. Replace the rear cover.
27. Close the smoked window cover.
28. Press the **LF** and/or **PAPER FWD** and **PAPER REV** switches until the top of your form lines up with the line indicator. Press the **TOF** switch to set top of form. The form will move back into the printer.



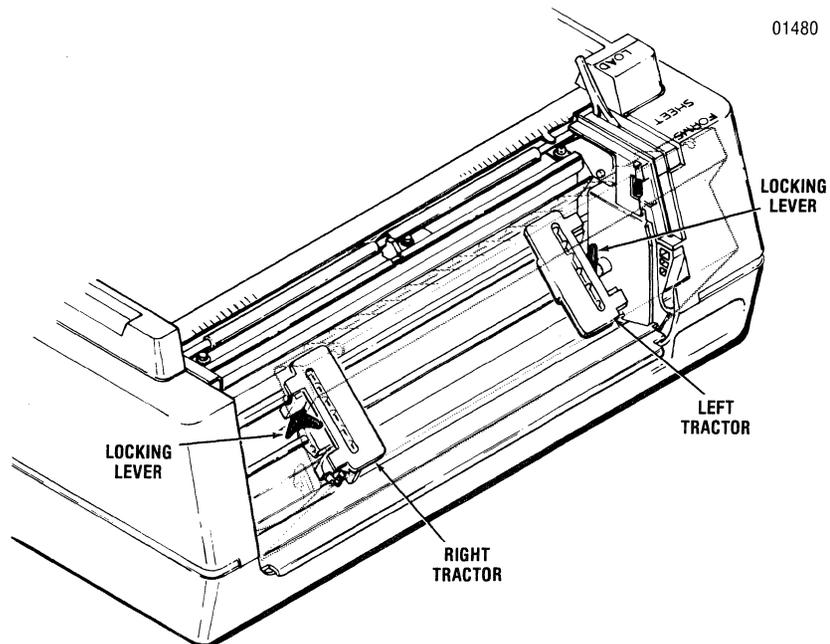
29. Press the **SELECT** switch to place the printer on line with the computer.
-
-

LOADING CUT SHEET FORMS

1. Unsnap the rear cover and place in "OPEN" position.



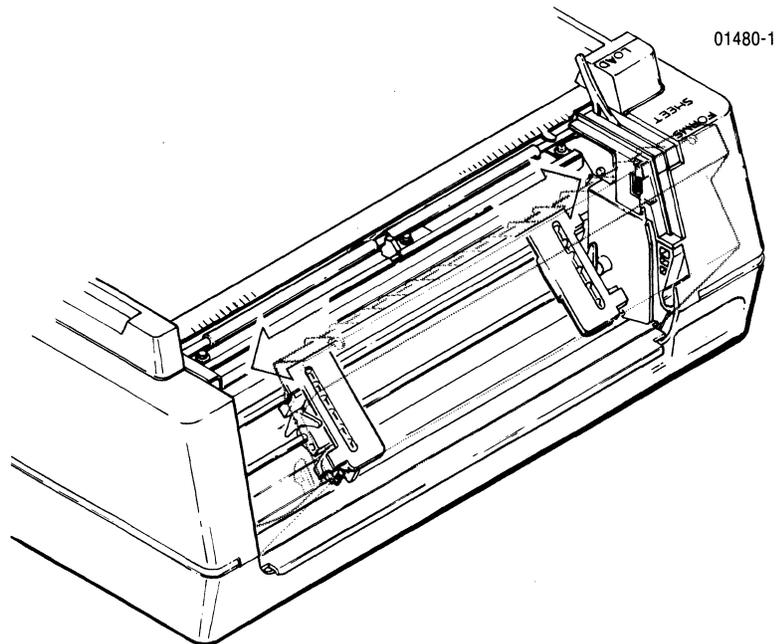
2. Locate the locking lever on each of the pinfeed tractors. Push the levers up to free the tractors from being locked in place.



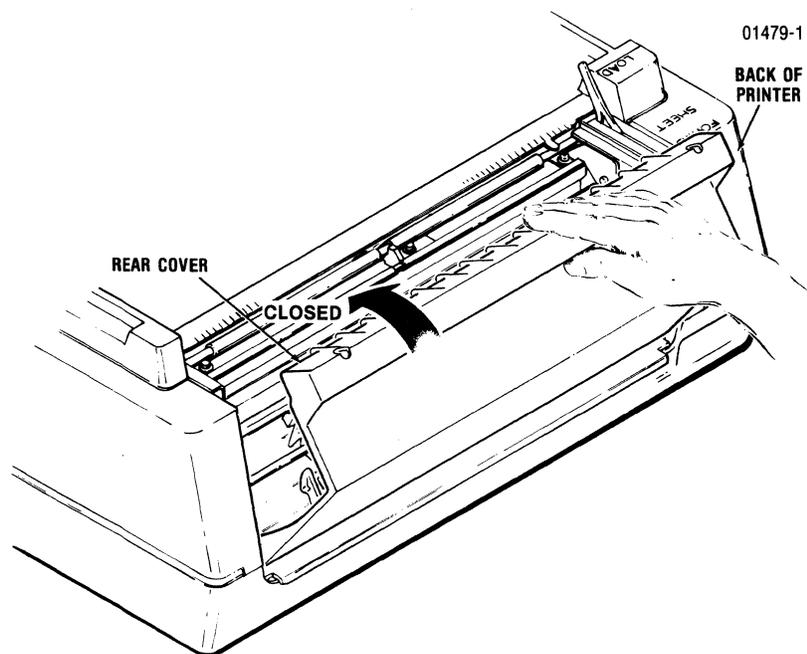
INSTALLATION

LOADING CUT SHEET FORMS (cont)

3. Slide the left tractor to the far left, the right tractor to the far right.

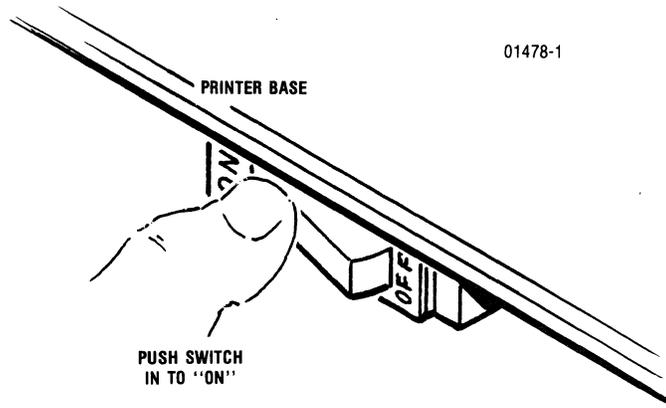


4. Snap the rear cover closed.

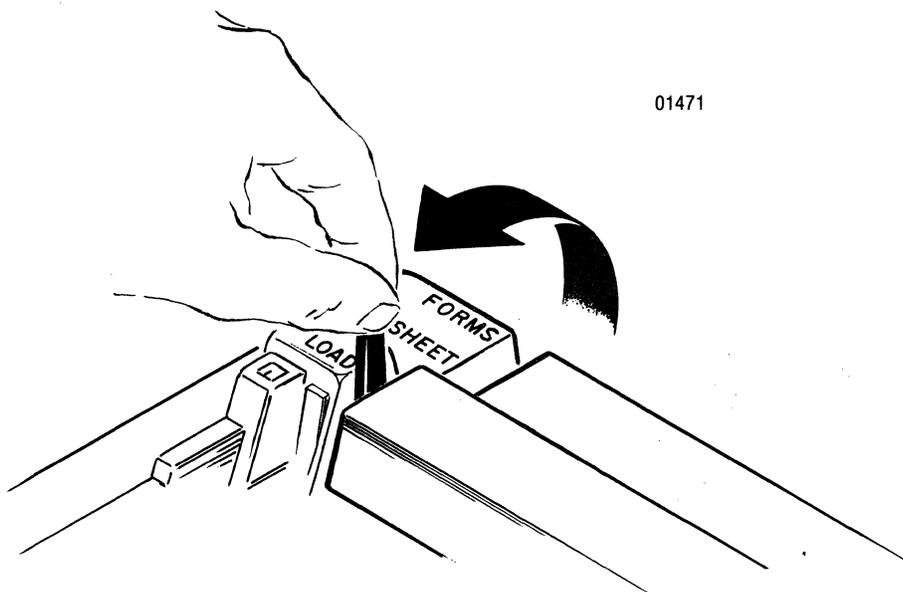


LOADING CUT SHEET FORMS (cont)

5. Turn the **POWER SWITCH** on by pressing the "I-ON" side of the switch. The **POWER** light and the **CUTSHEET** light will come on.

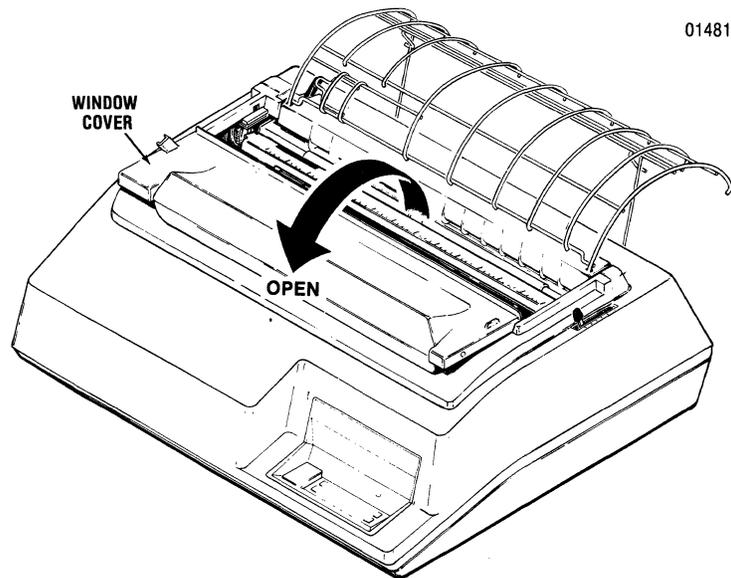


6. Move the forms lever to the "LOAD" position.

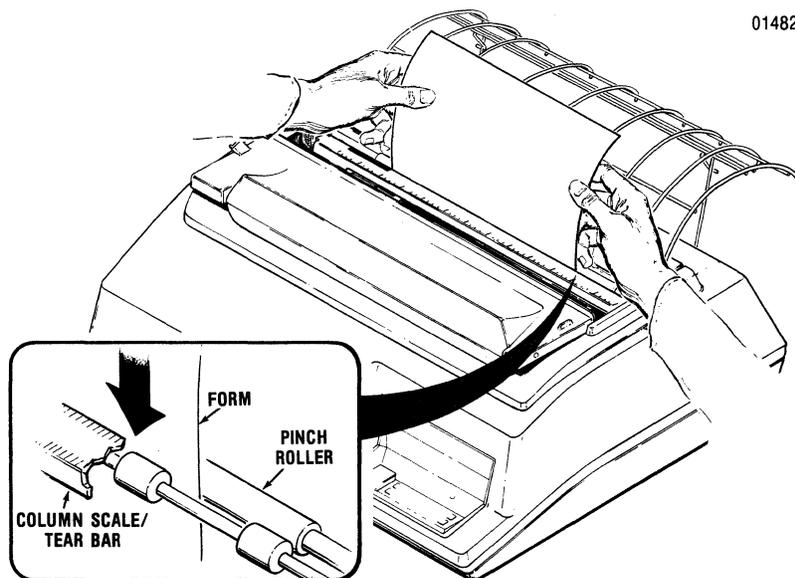


LOADING CUT SHEET FORMS (cont)

7. Open the smoked window cover.

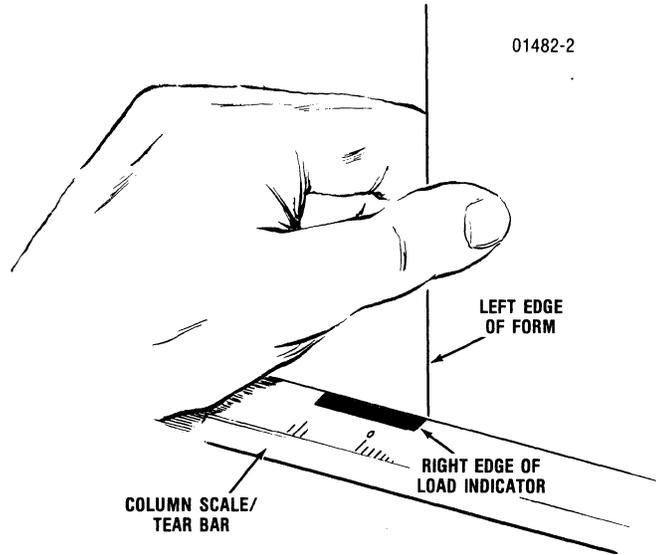


8. Position the bottom edge of a cut sheet form between the pinch rollers and lower the form until mechanical stops prevent further insertion.

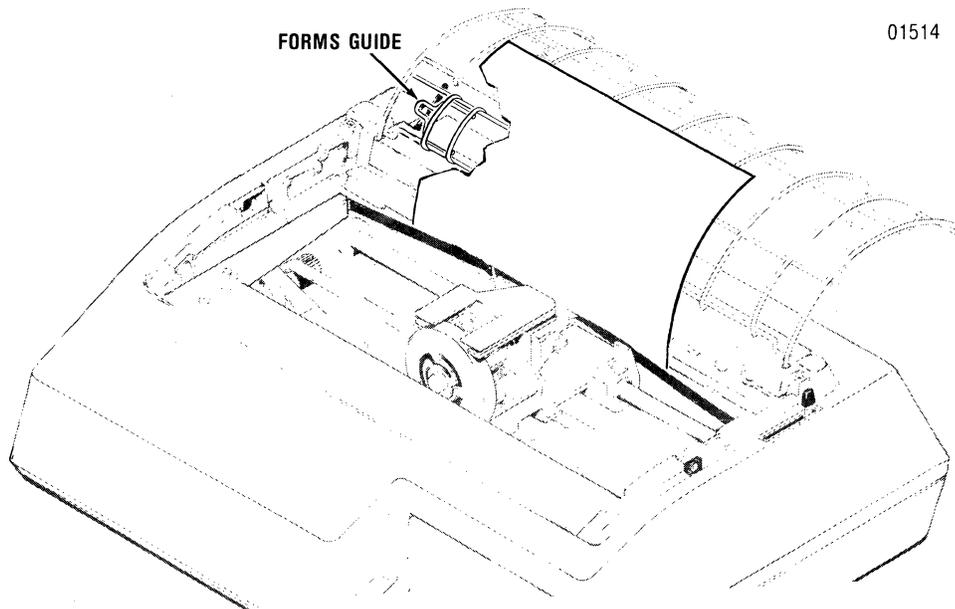


LOADING CUT SHEET FORMS (cont)

- Slide the form left or right until the left edge of the form lines up with the right edge of the cut sheet load indicator. This sets a $\frac{3}{4}$ " left margin. Adjust the form right to decrease margin width, left to increase margin width.

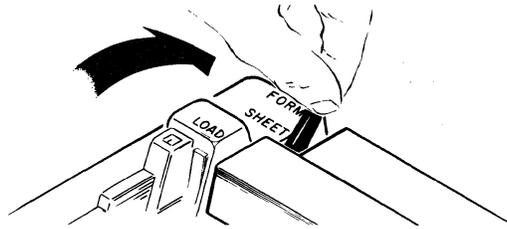


- Set the forms guide next to the left edge of the form.

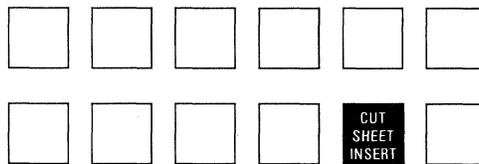


LOADING CUT SHEET FORMS (cont)

11. Move the forms lever to the "SHEET" position.



12. Close the smoked window cover.
13. Press the **CUT SHEET INSERT** switch on the control panel. The sheet will be drawn into the printer.



NOTE

Pressing the switch causes the pinch rollers to turn and draw the form into the printer. The precise point at which the form stops is governed by the **FORM LENGTH** and **LPI** parameter settings. When the parameters are set to match the physical length of the form (e.g., Form Length = 66/LPI = 6 for an 11" long form), the form is drawn in until the top edge of the form lines up with the scale/tear bar.

Since the printhead is approximately 1" below the scale/tear bar, the first printable line is approximately 1" below the top edge of the form. With parameters set as described above, line 7 is the first printable line on the form. The printer is programmed to reflect the offset, and the line counter advances to line 7 when the form is drawn in. There are then 60 (not 66) printable lines on the form.

Since the line counter is not changed when the **PAPER FWD** and/or **PAPER REF** switches are used, avoid using these switches as much as possible when loading cut sheet forms. Excessive use of **PAPER REV** may cause loss of data at the bottom of the form.

If you have a problem loading a form, the best procedure is to press the **FF** switch to eject the form, then try loading again.

RUNNING SELF TESTS

You can set the printer to perform a series of self tests. During the self tests the printer sequentially performs the following:

1. Checks the firing of each of the nine printwires
2. Checks the video signals used to control printing
3. Generates a self-test printout

The printout lists the active operating parameters (e.g. the active form length setting, active cpi setting, etc.) and a sixteen line sample of each character set at each cpi.

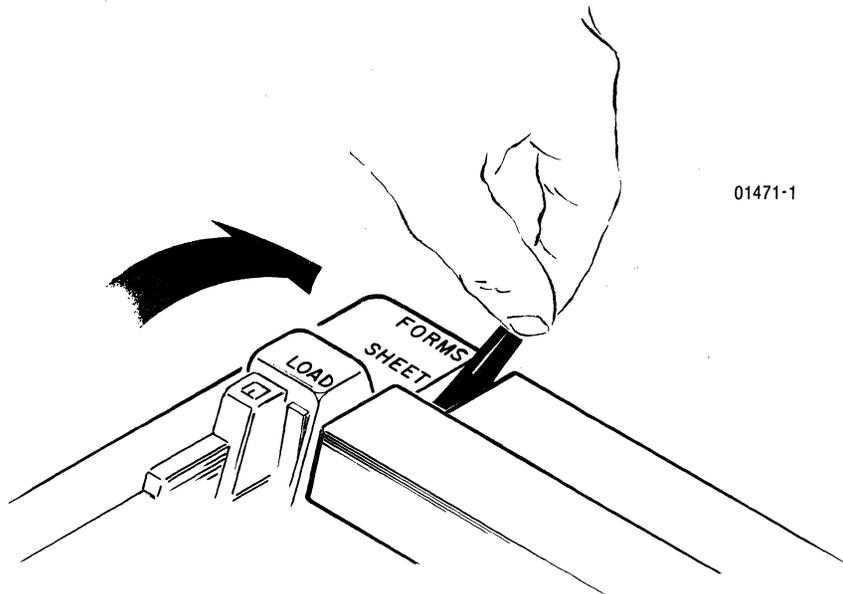
Self Test Operating Procedures

1. Load fanfold paper as explained in the INSTALLATION section of this manual.

NOTE

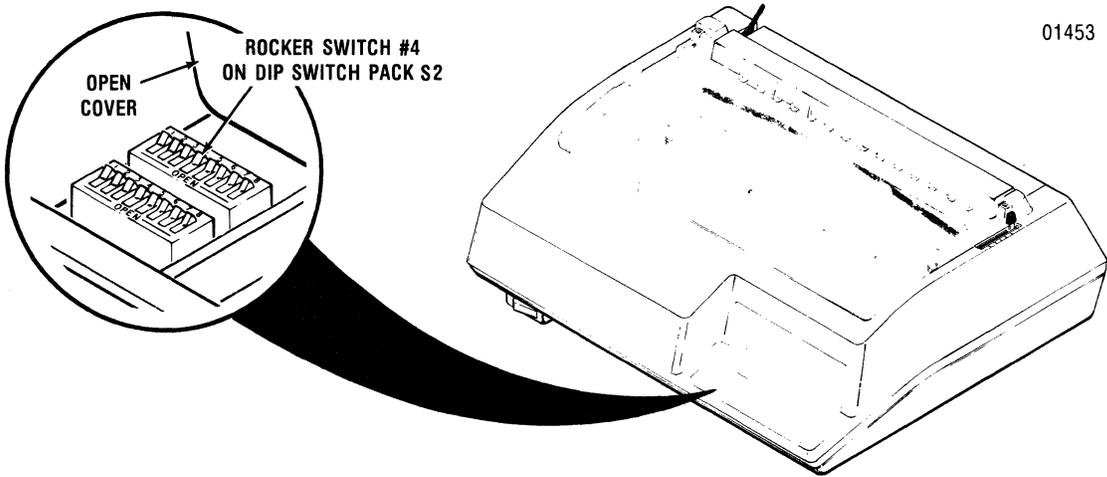
Use 15" fanfold paper. Some lines on the printout are 13.2" long.

2. Set the forms lever to "FORMS" position.

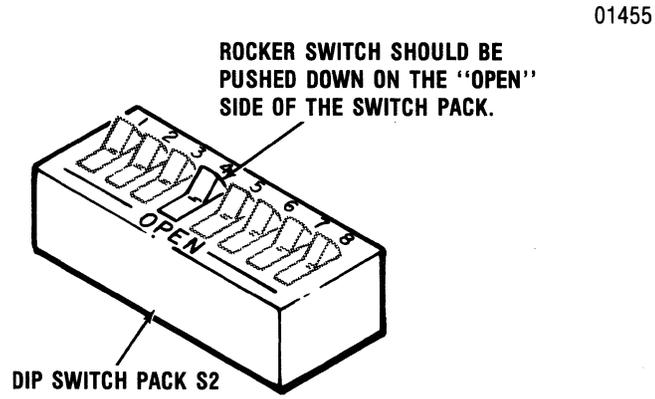


RUNNING SELF TESTS (cont)

3. Open the small cover on the left side of the control panel and locate rocker switch #4 on dip switch pack S2.



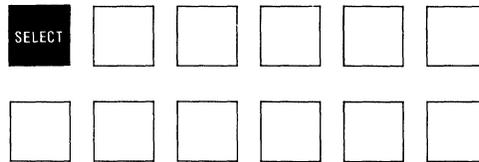
4. Ensure rocker switch #4 on S2 is set (pushed down) in the "OPEN" position. If it isn't, push it into "OPEN" position using a paper clip.



5. Close the switch pack cover.

RUNNING SELF TESTS (cont)

6. Press the control panel switch marked **SELECT**. The self test then begins.



The printer generates nine lines of print, as shown below, to check the firing of the nine printwires in the printhead.

```
W1 _____  
W2 _____  
W3 _____  
W4 _____  
W5 _____  
W6 _____  
W7 _____  
W8 _____  
W9 _____
```

RUNNING SELF TESTS (cont)

The consecutively numbered lines are printed to check the firing of print wires 1 (top wire . . .W1) through 9 (bottom wire . . .W9)

NOTE
Should one or more print wires fail to fire properly, the DSR light will blink and the test will stop. Try running the test over again after turning the printer off, then on again. If DSR light blinks again, try replacing the printhead or call for service.

Assuming a "normal" wire test, the printer next generates a self-test printout. The top part of the self test printout is shown on the next page.

The printout can be used to evaluate head motion, paper motion, and print quality. Should you note problems in any of these areas, refer to the **MAINTENANCE** section for troubleshooting advice.

NOTE
Refer to the Model 354 Programmers Manual for an in-depth explanation of the self-test printout.

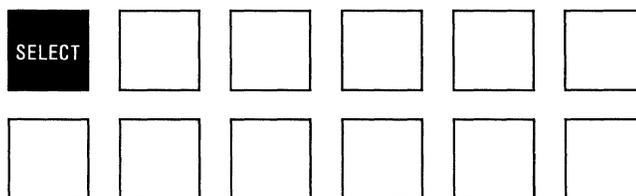
CONTENTS

- *Control Panel Switches*
- *Control Panel Lights*
- *Replacing the Ribbon Cassette*
- *Removing & Replacing Print Head*
- *Print Head Impression Adjustment*

GENERAL OPERATIONS

CONTROL PANEL SWITCHES

SELECT



The **SELECT** switch lets you control several printer functions.

You can **press the SELECT switch to place the printer on line**. Before pressing the switch to go on line, make sure:

- a. The **POWER** light is on.
- b. The **SELECT** light is off.
- c. The self-test DIP switch is **not** set for self-test.

On pressing the switch, you'll see the **SELECT** light come on. The light comes on to indicate the printer is on line and is ready to receive data from the computer.

You can **press the SELECT switch to take the printer off line**. Simply press the **SELECT** switch while the **SELECT** light is on. The light will go off, indicating the printer is no longer on line with the computer.

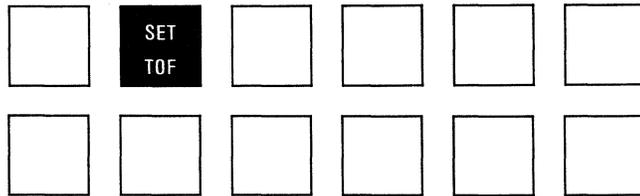
You can also **press the SELECT switch to override a paper empty condition**. If paper runs out during printing, normal operation stops and the **ALERT** light comes on. You can press the **SELECT** switch to resume printing. Printing will continue as long as you keep the **SELECT** switch depressed.

You can press **SELECT** to clear certain fault conditions. More details about clearing faults are provided in the maintenance section of this manual.

Finally, you can also **use the SELECT switch to start the printer self-test**.

CONTROL PANEL SWITCHES (cont)

SET TOF

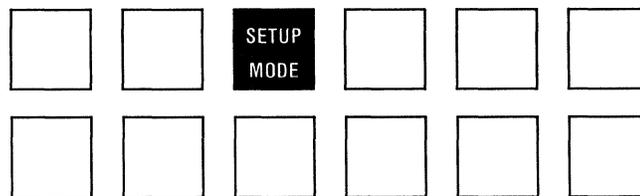


You can press the **SET TOF** (Set Top of Form) switch whenever you want to reset top of form. Before pressing the **SET TOF** switch to set top of form, make sure:

- a. The **POWER** light is on.
- b. The **SELECT** light is off.
- c. Fanfold paper is loaded.

Next, press the **PAPER FWD** and/or **PAPER REV** switches until that sector of paper you want as the first printable line is positioned in front of the line locator. Once it is, press the **SET TOF** switch. The paper will move down into the printer until the sector is in front of the print head.

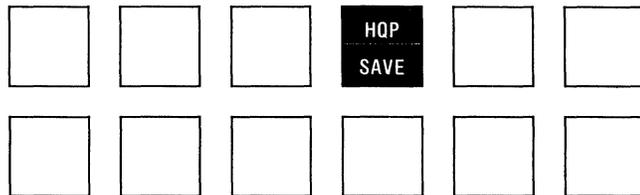
SETUP MODE



You can ignore the **SETUP MODE** switch! The switch controls certain functions in special, custom-ordered printers, but serves no purpose in the basic printer.

CONTROL PANEL SWITCHES (cont)

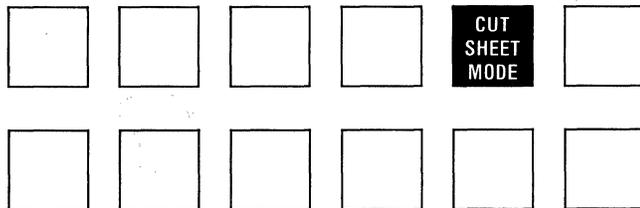
HQP/SAVE



The **HQP/SAVE** switch permits you to change from draft-quality printing to high-quality printing or vice-versa. To switch from draft-quality to high-quality, simply press the **HQP/SAVE** switch. The **HQP** light will come on, and high quality printing will begin at the start of the next line. To switch from high-quality printing to draft-quality, press the **HQP** switch. The **HQP** light will go off, and draft-quality printing will begin at the start of the next line.

The **SAVE** function, like the **SETUP MODE** function, is not included in the basic printer.

CUT SHEET MODE

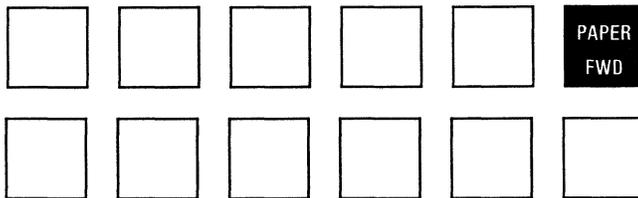


The **CUT SHEET FORMS** switch lets you change from fanfold paper to cut sheet paper, or vice-versa. Press the switch once and the printer will adjust for one type paper; press the switch again and the printer will readjust for the other type paper.

Pressing the **CUT SHEET MODE** switch turns the **CUT SHEET** light on or off. When the light is on, the printer is set for cut sheet printing; when the light is off the printer is set for fanfold printing. Pressing the **CUT SHEET MODE** switch also turns the **ALERT** light off if it is "steady" on. The light will go off because the **ALERT** light functions as a paper out indicator in fanfold mode only. Loading fanfold paper into the printer causes the printer to automatically adjust for fanfold mode operation.

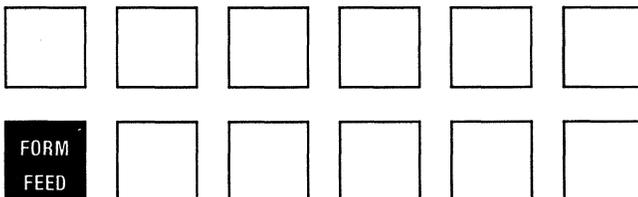
CONTROL PANEL SWITCHES (cont)

PAPER FWD



Forms can be advanced through the printer in very small steps by pressing the **PAPER FWD** switch. Pressing the switch once advances fanfold forms by 1/120 inch or advances cut sheet forms by 1/108 inch. If you press the **PAPER FWD** switch and keep it held down for longer than 1/2 second, forms will advance until you release the switch.

FORM FEED



The **FORM FEED** switch controls a motor which drives the paper handling mechanism.

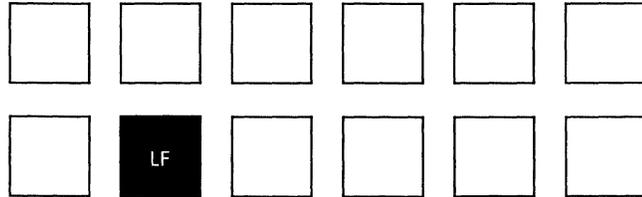
If you are printing fanfold forms, pressing the **FORM FEED** switch will rapidly advance the paper to the next top of form position.

If you are using the automatic cut sheet feeder, pressing the **FORM FEED** switch (1) ejects the form which is in the printer, and (2) loads a new form into the printer from one of the three feeder bins.

If you are operating the printer in manual cut sheet mode, pressing the **FORM FEED** switch ejects the sheet which is in the printer. A new sheet can then be loaded.

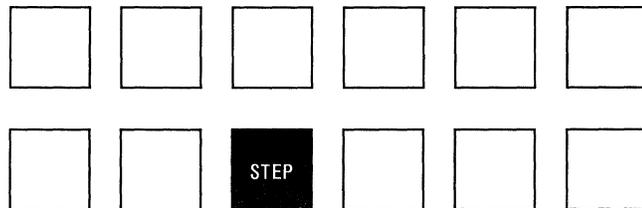
CONTROL PANEL SWITCHES (cont)

LF



The **LF** (Line Feed) switch lets you advance forms one line at a time, or, if you hold the switch depressed for about ½ second, any number of lines until you release the switch. The **LF** switch can only be used when the printer is off-line—that is, when the **SELECT** light is off.

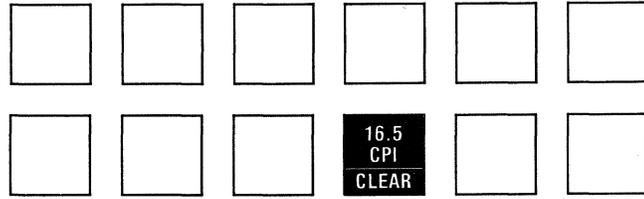
STEP



You can ignore the **STEP** switch. The switch controls certain functions in special, custom-ordered printers, but serves no purpose in the basic printer.

CONTROL PANEL SWITCHES (cont)

16.5 CPI/CLEAR



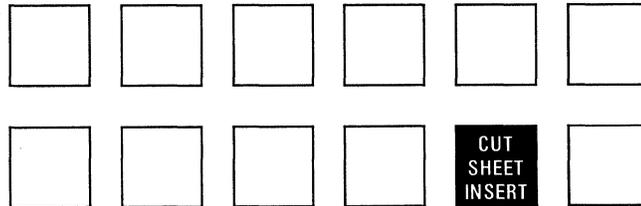
In the basic printer, the **16.5 CPI/CLEAR** functions as a CPI selection switch only; ignore the "CLEAR" function.

You can press the **16.5 CPI/CLEAR** switch to change print from 16.5 cpi to 10 cpi, or to change print from 5, 6, 10, or 12 cpi to 16.5 cpi.

Pressing the 16.5 cpi switch turns the 16.5 cpi light on or off. The light goes on when 16.5 cpi is active. Once the light comes on, 16.5 cpi printing begins at the start of the next new line. Similarly, pressing the switch to switch from 16.5 cpi to 10 cpi causes the 16.5 cpi light to go out. 10 cpi printing then begins at the start of the next new line.

The **16.5 CPI** switch only works when you are printing monospaced characters. The switch will **NOT** work if you are in printing proportional characters.

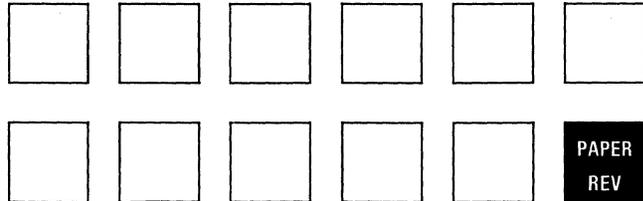
CUT SHEET INSERT



You must press the **CUT SHEET INSERT** switch to manually load a single cut sheet form into the printer. Before pressing the switch, be sure the **CUT SHEET** light is "ON." Refer to the **INSTALLATION** section of this manual for details about loading cut sheet forms.

CONTROL PANEL SWITCHES (cont)

PAPER REV

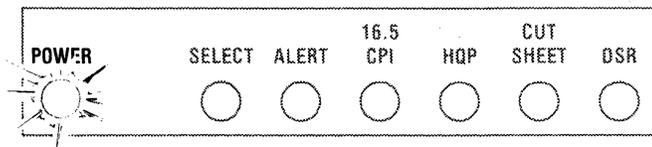


The **PAPER REV** switch works the same way as the **PAPER FWD** switch except paper motions are reverse, instead of forward.

CONTROL PANEL LIGHTS

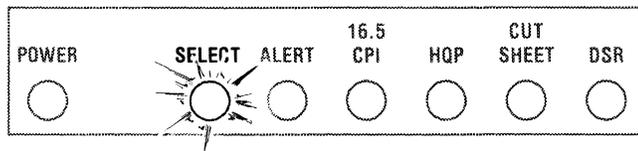
This section describes the basic function of each light on the control panel. Under normal circumstances, control panel lights are either "ON" or "OFF." However, when certain "fault" conditions develop, one or more of the panel lights will blink to indicate fault exists. The fault indication function of the control panel lights is described in the MAINTENANCE section of this manual.

POWER



When the **POWER** light is on, the printer is "under power." When the **POWER** light is off, the printer is not "under power" and cannot be operated at all. The **ON/OFF** switch turns the **POWER** light on and off when the printer is connected to an AC power outlet.

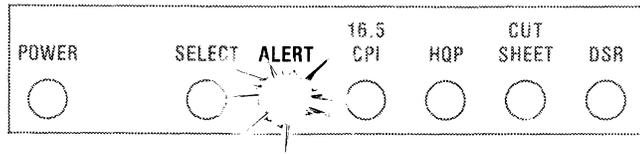
SELECT



When the **SELECT** light is on, the printer can receive and print data sent by the computer. When the **SELECT** light is off, the printer cannot receive data from the computer. The **SELECT** switch on the control panel turns the **SELECT** light on and off.

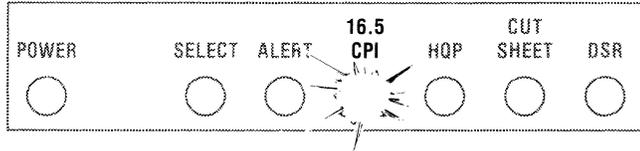
CONTROL PANEL LIGHTS (cont)

ALERT



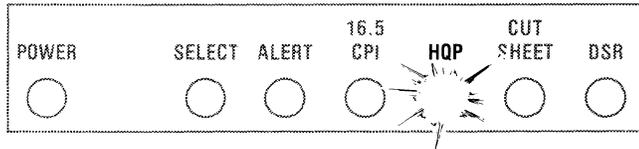
When the **ALERT** light is on, the printer will not print. The **ALERT** light goes “steady on” when paper runs out during printing. The **ALERT** light blinks when the top cover is left open.

16.5 CPI



When the **16.5 CPI** light is on, characters are printed at a density of 16.5 characters per inch—the “tightest” density possible. When the **16.5 CPI** light is off, characters are printed at a density other than 16.5 cpi. The **16.5 CPI/CLEAR** switch on the control panel turns the **16.5 CPI** light on and off.

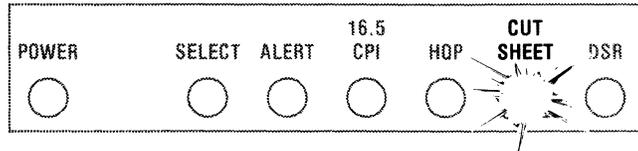
HQP



HQPd stands for “High Quality Print.” When the **HQP** light is on, characters are printed in the high quality print (or multipass) mode. When the **HQP** light is off, characters are printed in the draft (single-pass) mode. The **HQP/SAVE** switch on the control panel turns the **HQP** light on and off.

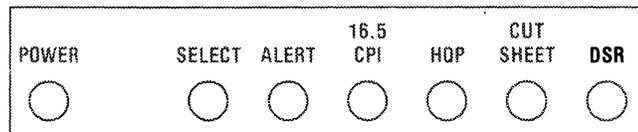
CONTROL PANEL LIGHTS (cont)

CUT SHEET



When the **CUT SHEET** light is on, the printer is ready to accept and print cut sheet forms. When the **CUT SHEET** light is off, the printer is ready to accept and print fanfold forms. The **CUT SHEET** switch on the control panel turns the **CUT SHEET** light on and off.

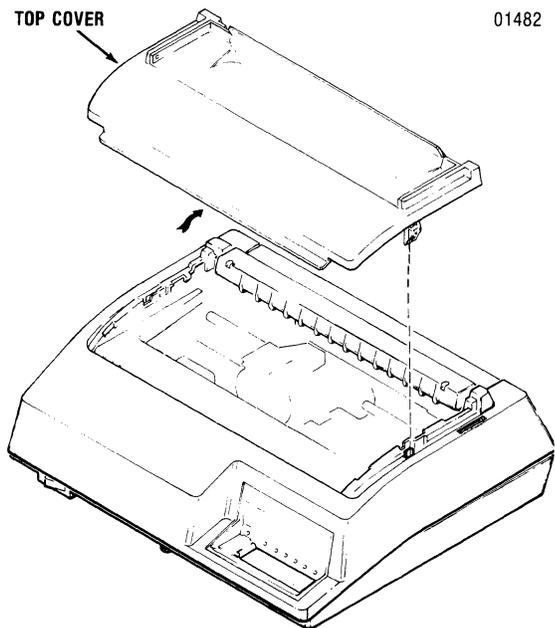
DSR



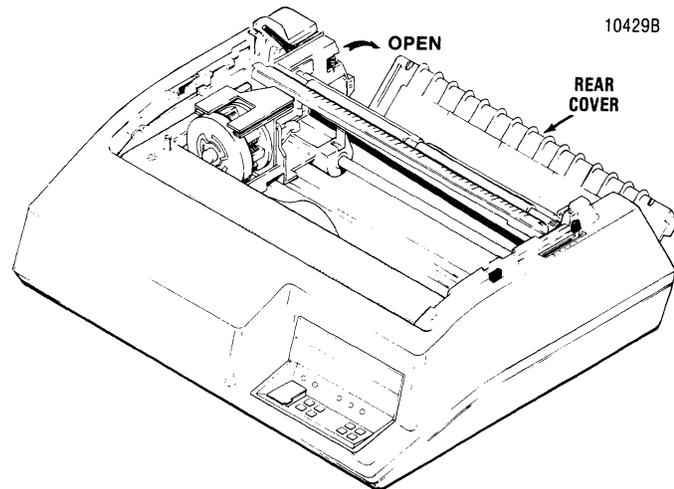
The **DSR** light is not used in the basic printer.

REPLACING THE RIBBON CASSETTE

1. Lift the top cover up and off the printer.

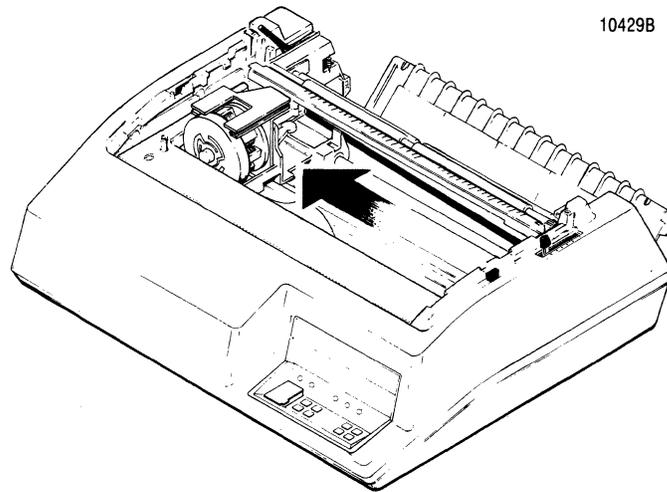


2. Unsnap the rear cover and place in the open position.

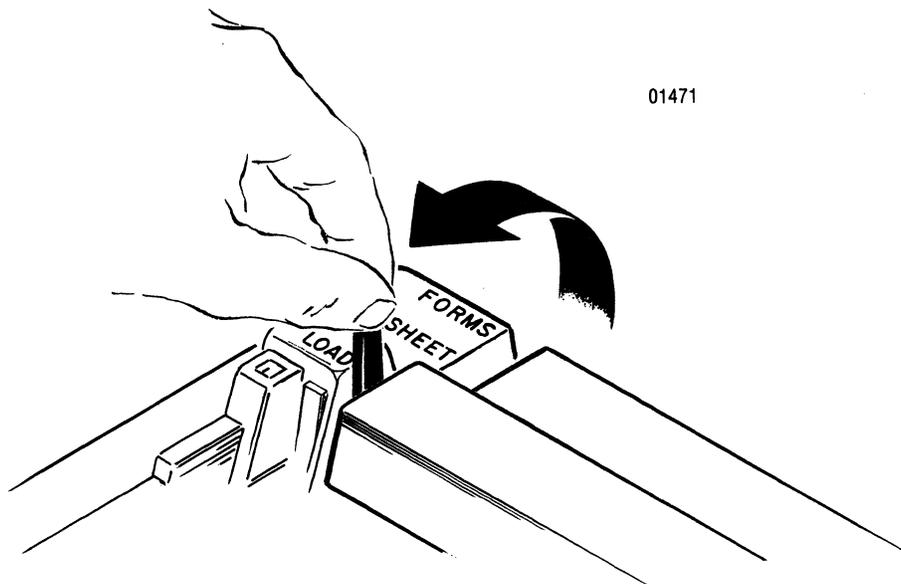


REPLACING THE RIBBON CASSETTE (cont)

3. Move the printhead to the far left.

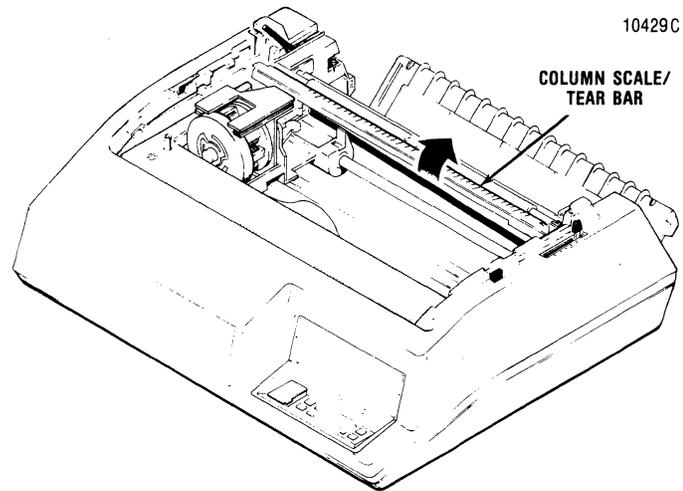


4. Place the forms lever in the "LOAD" position.

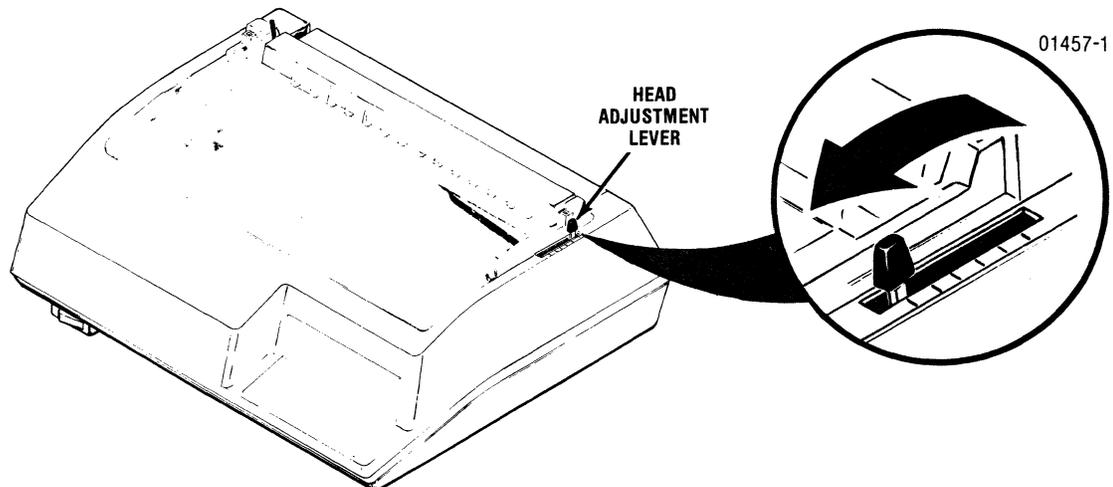


REPLACING THE RIBBON CASSETTE (cont)

5. Lift the column scale bar up until it locks into "UP" position.

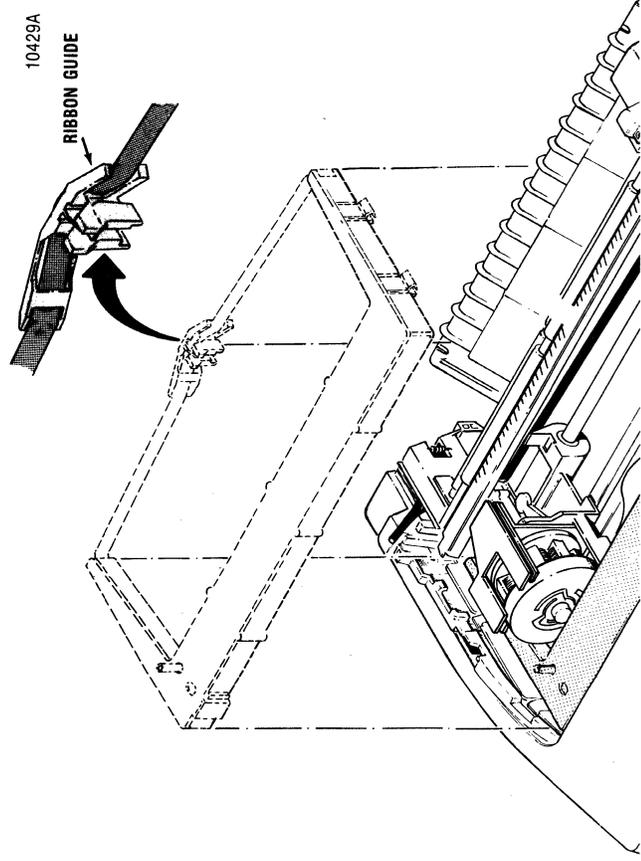


6. Pull the head adjustment lever toward the front of the printer.

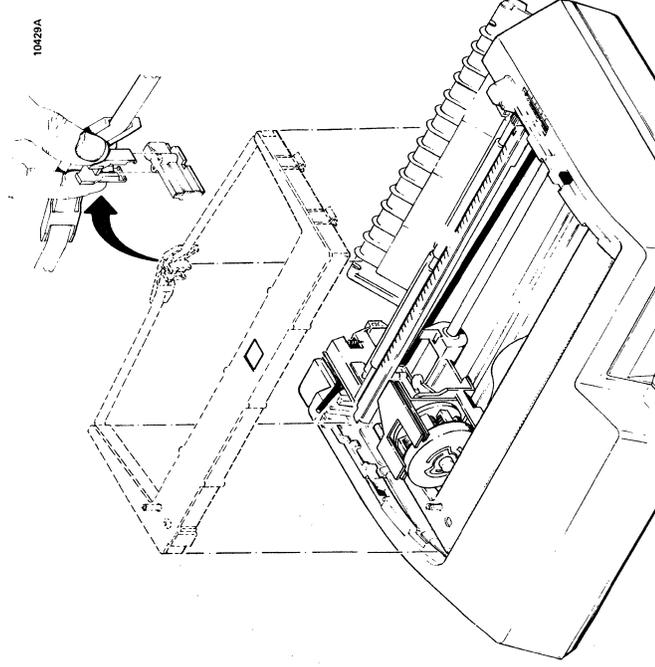


REPLACING THE RIBBON CASSETTE (cont)

7. Locate the ribbon guide.

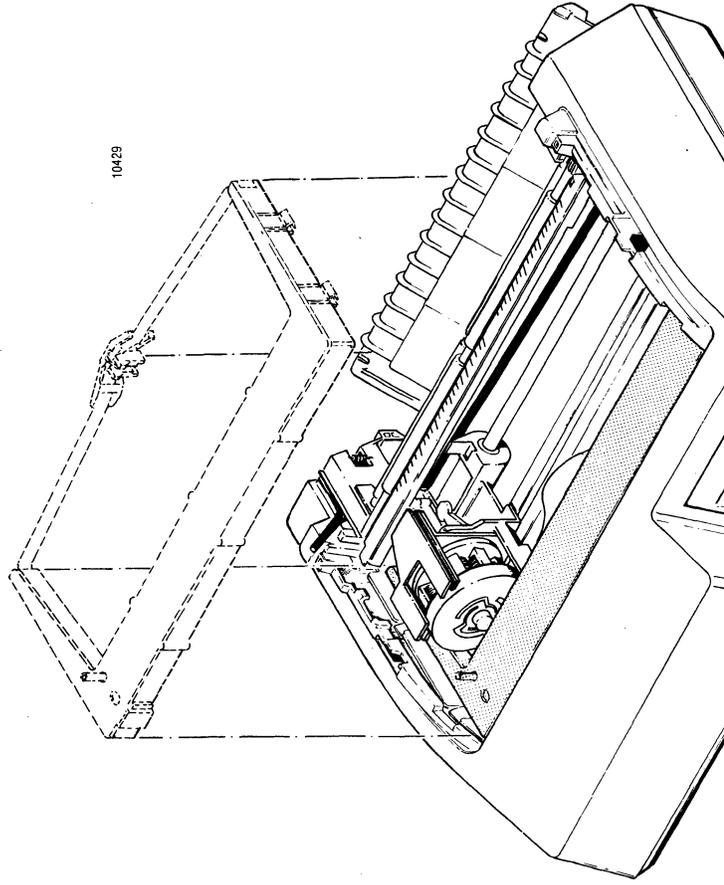


8. Remove the ribbon guide from the front of the printhead by squeezing together the two tabs at the top of the guide and then lifting up.

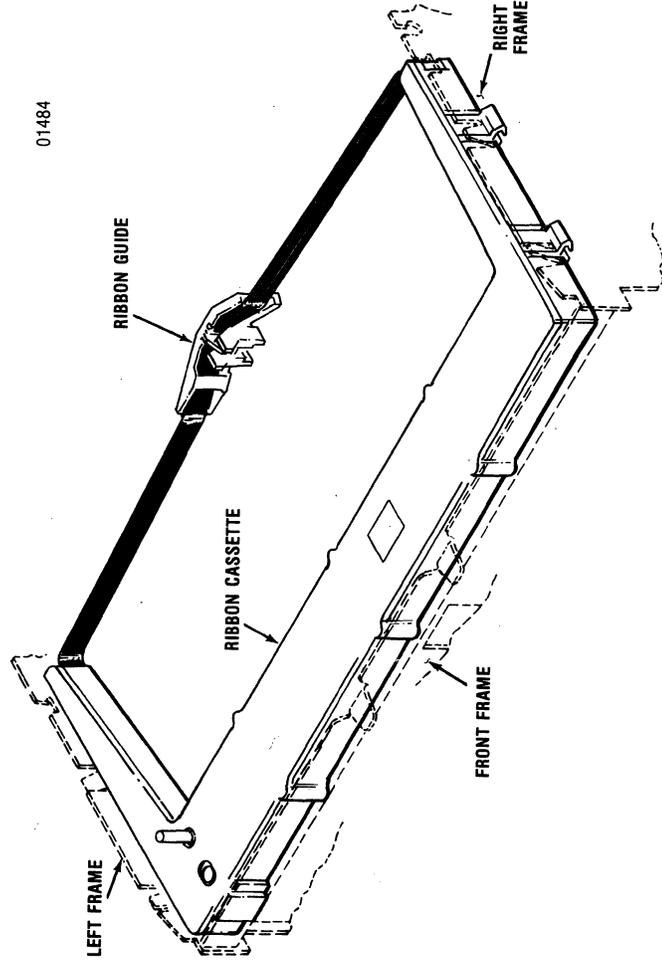


REPLACING THE RIBBON CASSETTE (cont)

9. Lift the used ribbon cassette and attached ribbon guide up and out of the printer.

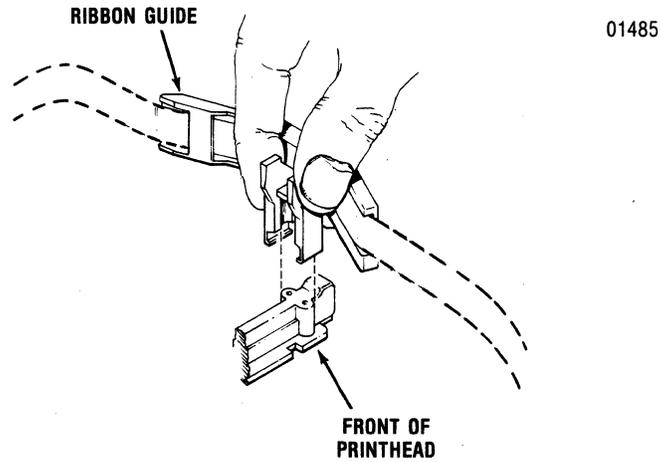


10. Push the new cassette into place, snapping the cassette retaining tabs into slots in the side frames.

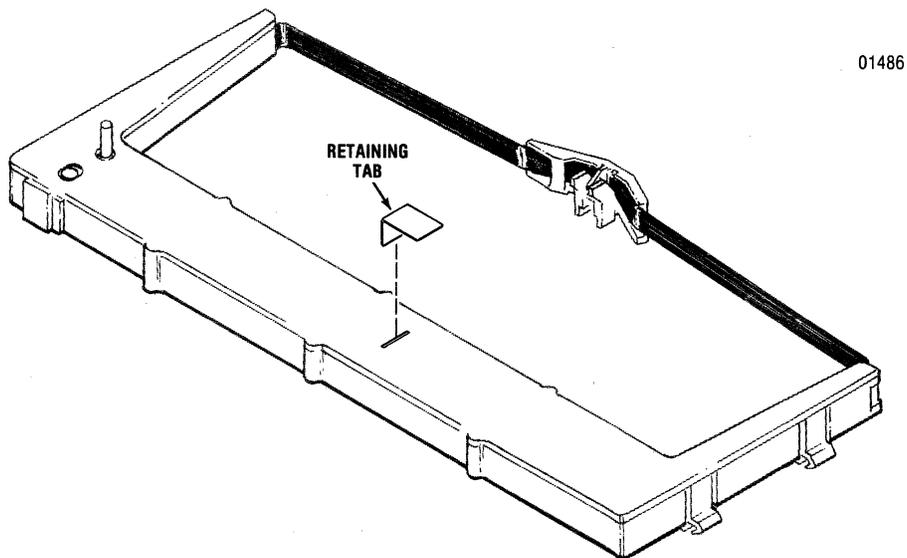


REPLACING THE RIBBON CASSETTE (cont)

11. Install the new ribbon guide by squeezing together the two tabs at the top of the guide and pushing the guide down onto the front of the printhead.

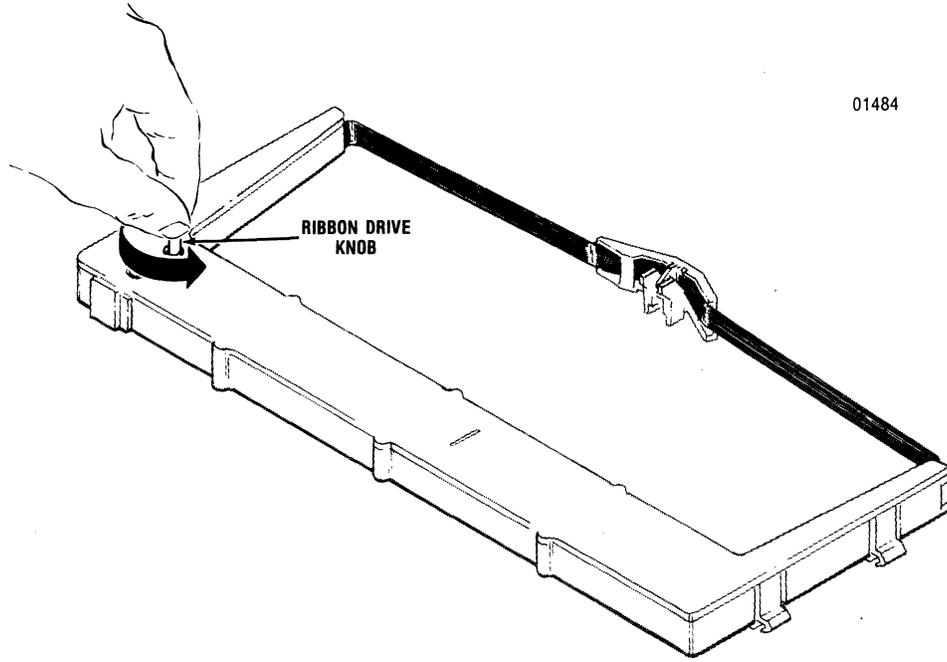


12. Remove the small retaining tab from the top of the ribbon cassette.

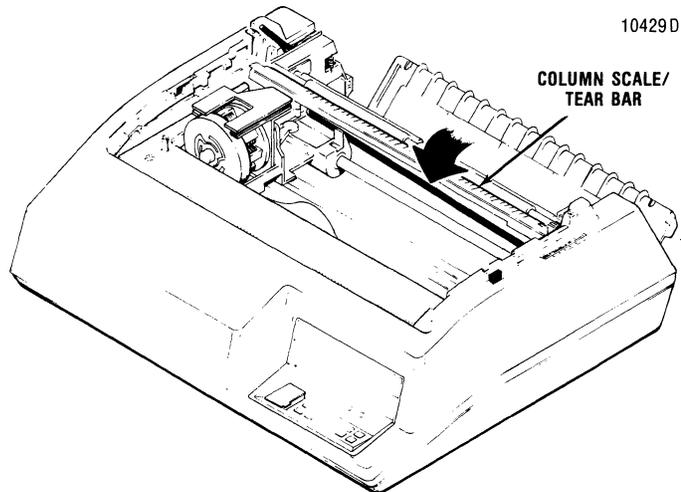


REPLACING THE RIBBON CASSETTE (cont)

13. Rotate the ribbon drive knob counterclockwise several turns to ensure the ribbon is feeding properly.

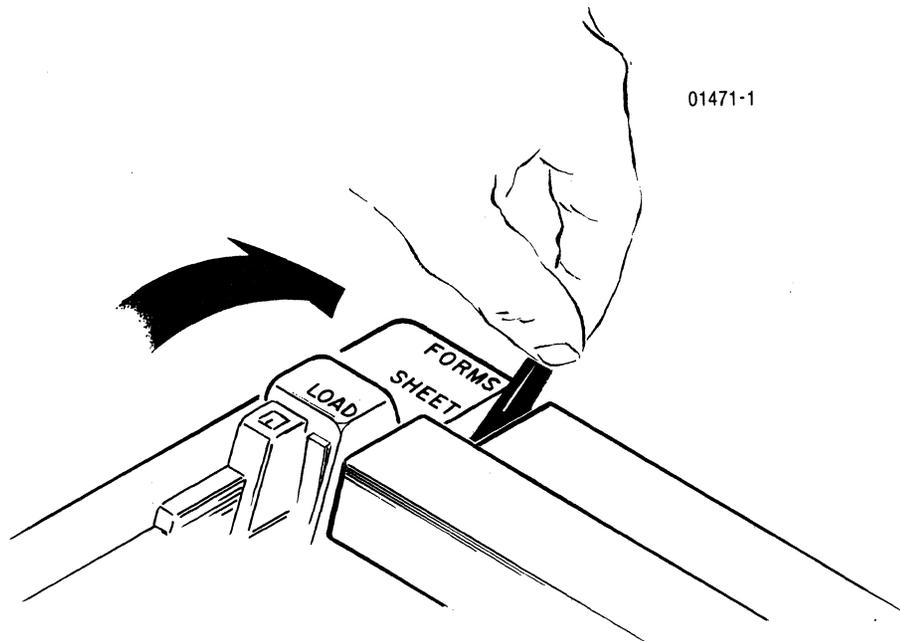


14. Lower the column scale bar.

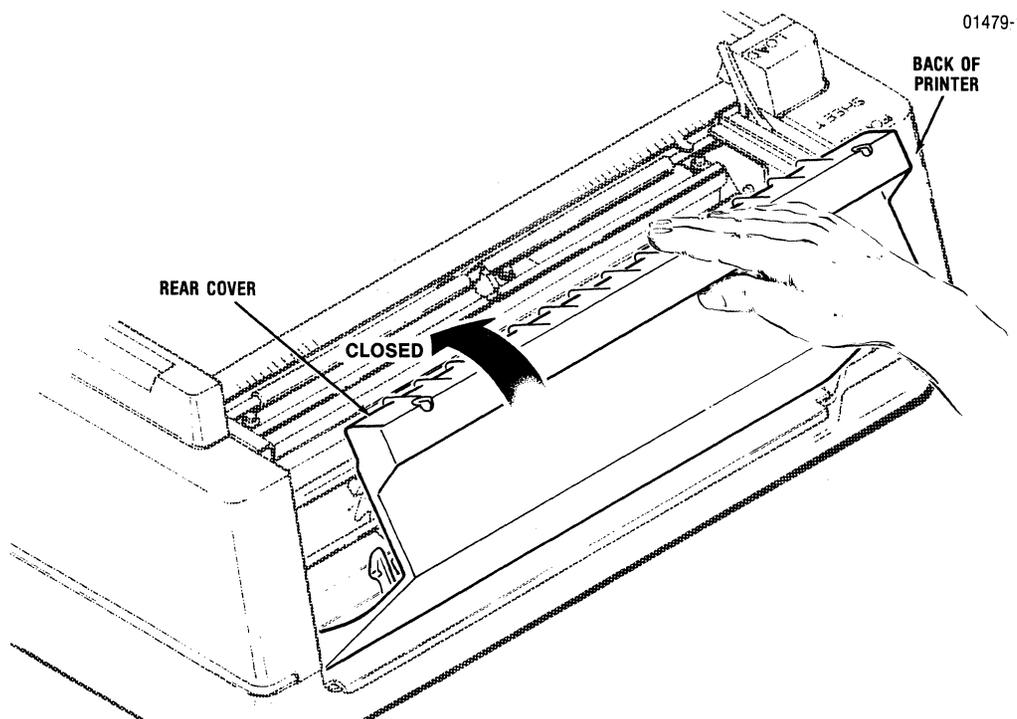


REPLACING THE RIBBON CASSETTE (cont)

15. Place the forms lever to "SHEET" or "FORMS" position, depending on the type form to be printed.

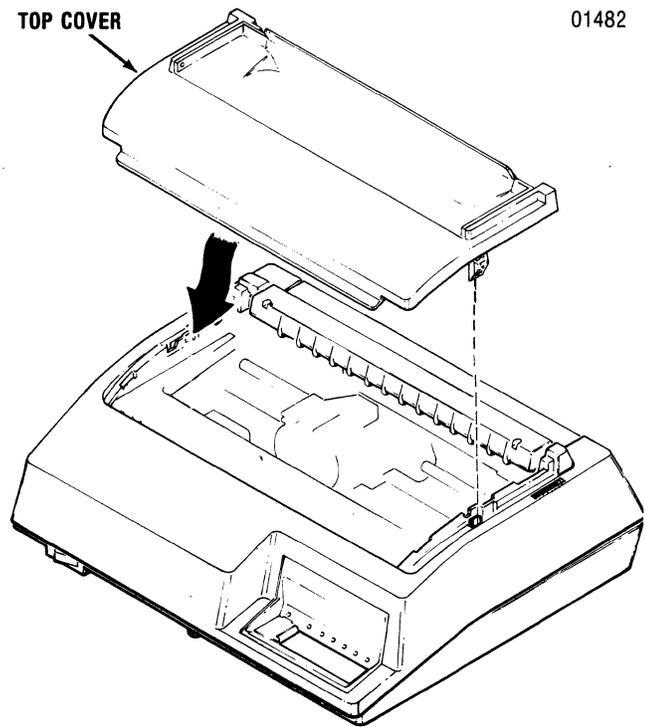


16. Snap shut the rear cover.



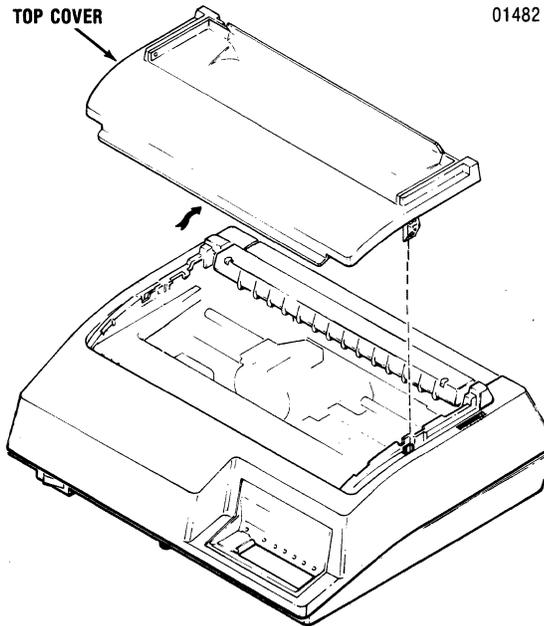
REPLACING THE RIBBON CASSETTE (cont)

17. Guide the front lip of the top cover under the body cover, then press the cover down until it snaps in place.

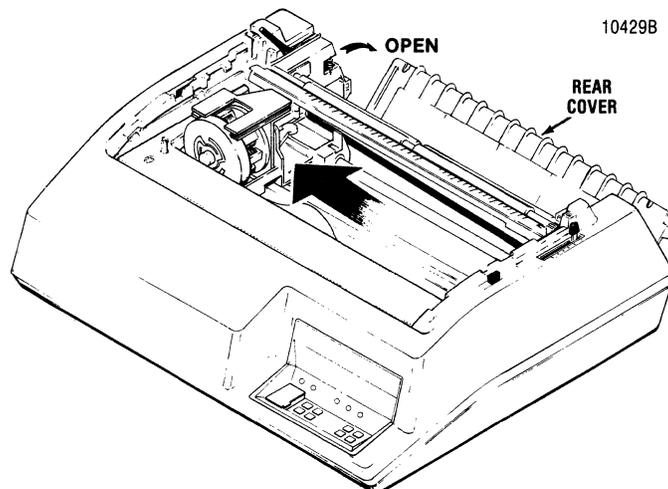


REMOVING AND REPLACING THE PRINTHEAD

1. Remove the top cover by lifting the rear edge of the cover off the printer.



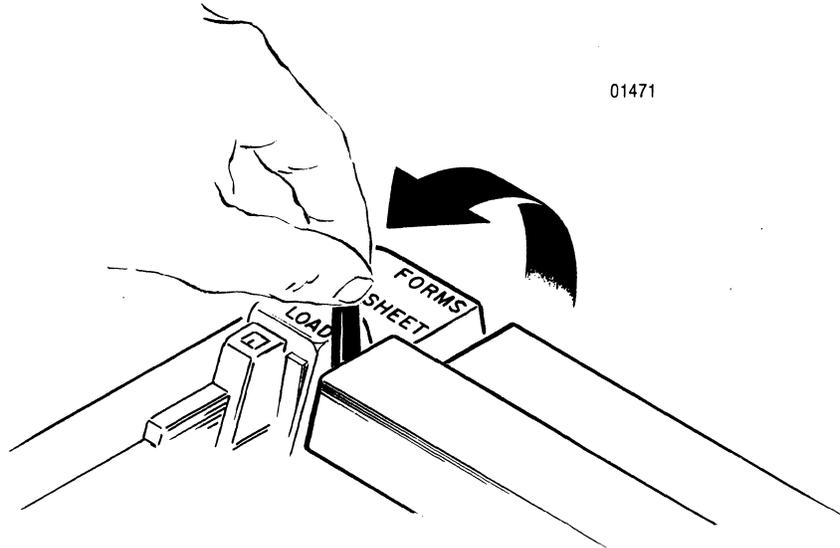
2. Unsnap the top part of the rear cover and place the cover in the open position.



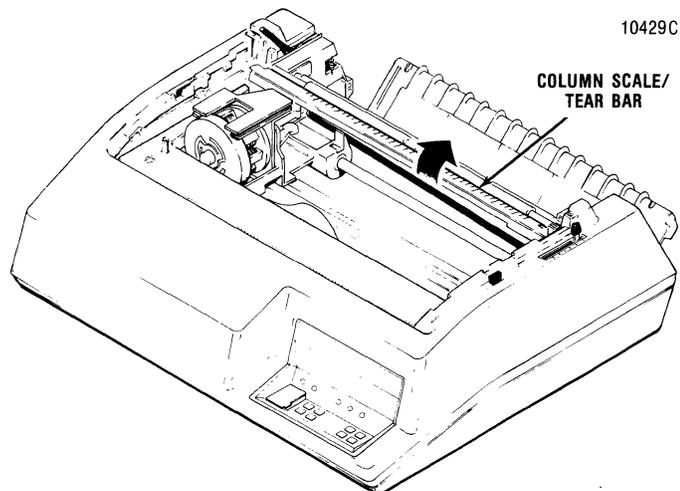
3. Move the printhead to the far left.

REMOVING AND REPLACING THE PRINTHEAD (cont)

4. Pull the forms lever toward the front of the printer until the lever is in "LOAD" position . . . this locks the printhead in place on the left side of the printer.

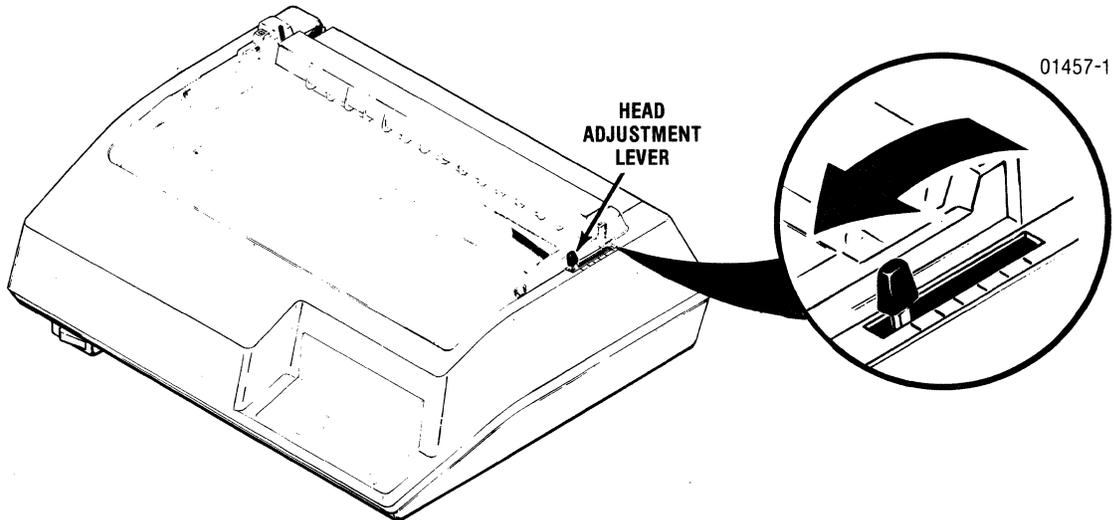


5. Lift the column scale to the "UP" position.

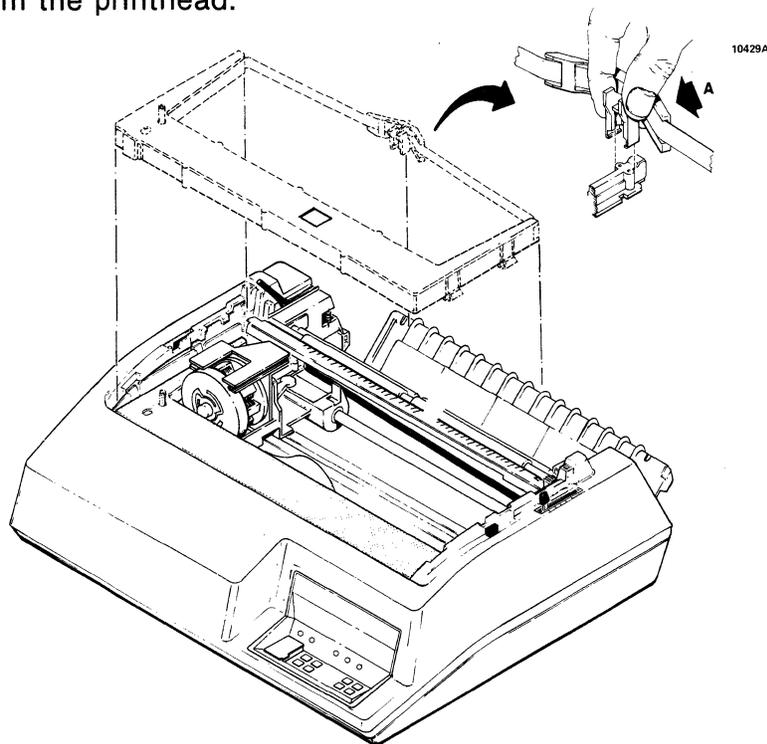


REMOVING AND REPLACING THE PRINTHEAD (cont)

6. Pull the head adjustment lever toward the front of the printer.

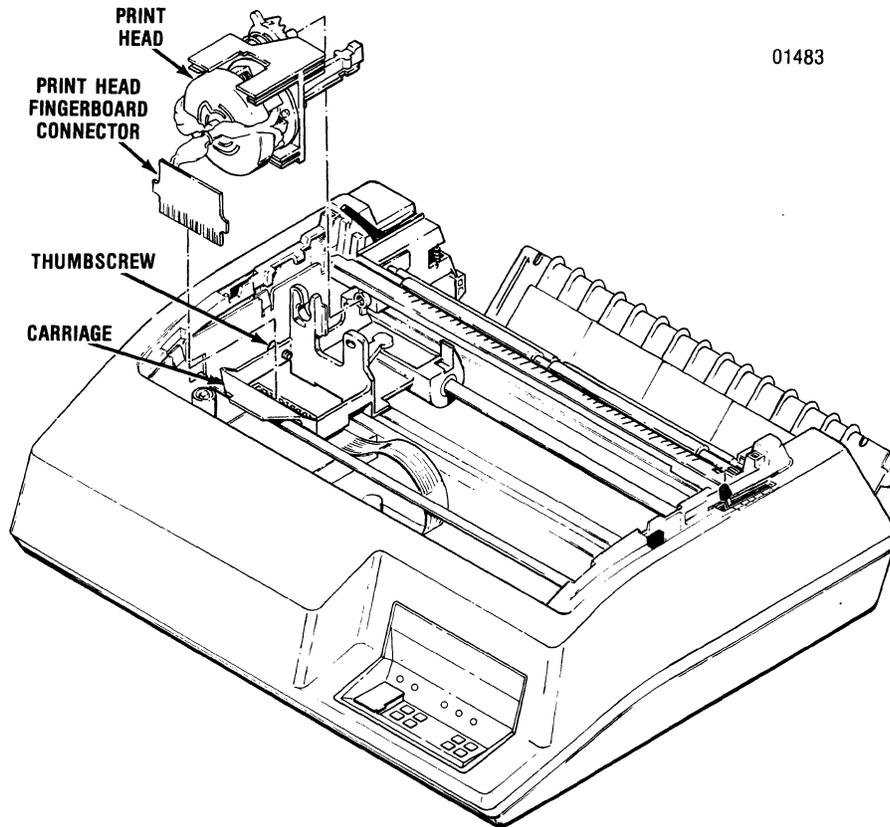


7. Remove the ribbon guide from the front of the print head by squeezing together the two tabs at the top of the guide and lifting the guide up and away from the printhead.



REMOVING AND REPLACING THE PRINTHEAD (cont)

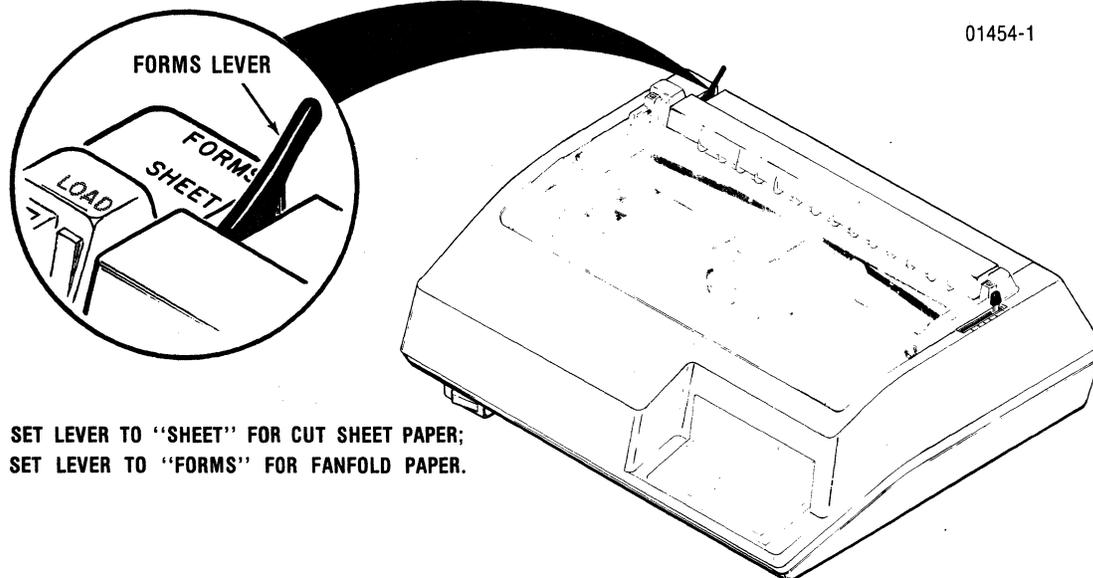
8. Locate the printhead fingerboard connector and remove the connector from the carriage.



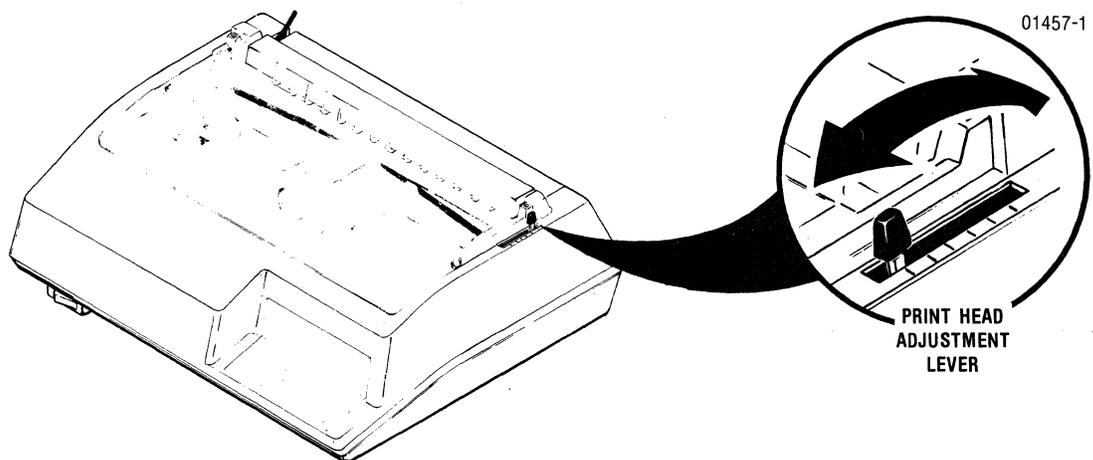
9. Locate and loosen the thumbscrew on the right side of the carriage.
10. Pull the printhead toward the front of the printer, then lift the head up and out of the printer.
11. To replace the printhead, perform the preceding ten (10) steps in reverse order.

PRINT HEAD IMPRESSION ADJUSTMENT

1. Load paper into the printer. Refer to the INSTALLATION section of this manual for details on paper loading.
2. Ensure the forms lever is in either "FORMS" or "SHEET" position.



3. While manually moving the printhead from side to side move the head adjustment lever (see figure) in or out until smudging or paper rippling occurs, then move the lever back (toward control panel) one position.



PRINT HEAD IMPRESSION ADJUSTMENT (cont)

4. Return the printhead to the far left side of the printer.
5. Print some material—either data sent from the host device, or the self-test printout described in the INSTALLATION section of this manual.
6. Check the printout to ensure good, clean quality. If the print is too dark or too light, adjust the printhead in or out as required.

NOTE
It is possible to perform this adjustment while printing is in progress. Simply move the lever in or out as print is being generated. Leave the lever set to the one position which produces the best quality print.

CONTENTS

- *Introduction*
- *Fault Indications*
- *Printing/Paper Handling Problems*
- *Calling for Service*
- *Reference Manuals*

MAINTENANCE

INTRODUCTION

This section will help you deal with problems that may develop as you operate the printer.

The printer has been programmed to identify certain “fault” conditions. When “fault” conditions exist, the printer stops operating and one or more of the control panel lights blinks. An explanation of the control fault indications is provided in this section, as are suggestions for correcting fault conditions.

Some of the more common printing and paper handling problems you may encounter are also explained in this section. Ordinarily, you’ll be able to correct these problems by performing the simple corrective measures which are described in the pages which follow.

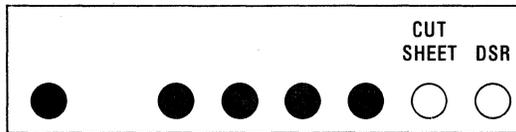
Finally, this section explains how to call for service, should the need ever arise.

FAULT INDICATIONS

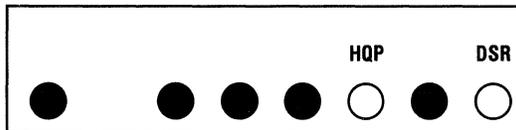
Control panel lamps blink if...

- an **integrated circuit inside the printer fails to operate properly.**
 - **one or more of the print wires is not firing properly.**
 - the **top cover is open** while the printer is being operated.
 - the **printhead is jammed or moving at the wrong speed.**
-

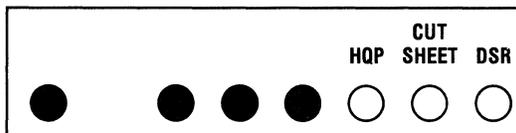
The following displays indicate an **integrated circuit is not operating properly:**



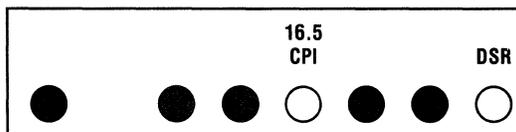
The CUT SHEET and DSR LAMPS blink



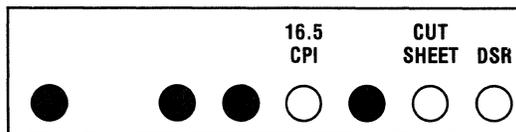
The HQP and DSR LAMPS blink



The HQP, CUT SHEET and DSR LAMPS blink



The 16.5 CPI and DSR LAMPS blink

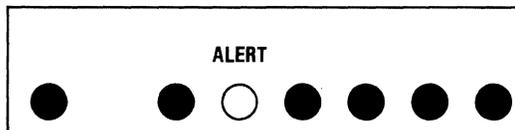


The 16.5 CPI, CUT SHEET and DSR LAMPS blink.

If you see one of these error indications, CALL A QUALIFIED FIELD SERVICE REPRESENTATIVE FOR ASSISTANCE; the error condition is NOT operator correctable.

FAULT INDICATIONS (cont)

The following display indicates the **printer top cover is open**, preventing further printer action.

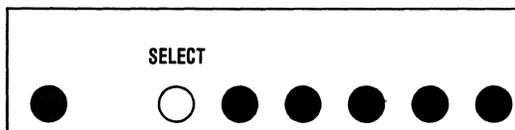


The ALERT
LAMP
blinks

If you see this error indication, **CLOSE THE PRINTER TOP COVER.**

Press the **SELECT** switch to clear the error.

The following display indicates the **printhead is jammed or moving at the wrong speed.**

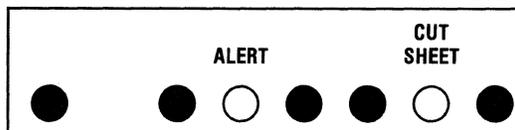


The
SELECT LAMP
blinks

If you see this error indication, **CLEAR EXISTING PAPER JAMS, REMOVE EXISTING OBSTACLE AND/OR CLEAN THE CARTRIDGE GUIDE.**

Press the **SELECT** switch to clear the error and reposition the printhead to the left.

The following display indicates the **automatic sheet feeder has run out of paper and/or a paper jam exists.**



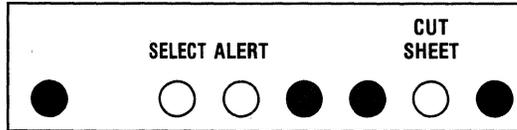
The ALERT and
CUT SHEET
LAMP blinks

If you see this error indication, **CLEAR THE EXISTING PAPER JAM and/or LOAD FORMS OR ENVELOPES INTO THE SHEET FEEDER.**

Press the **FORM FEED** switch to load a new form from the feeder, or press **SELECT** to clear the error. (**LF, PAPER FWD, and PAPER REV** may be used to clear a jam.)

FAULT INDICATIONS (cont)

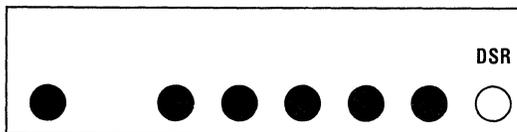
The following display indicates a **premature exit of a cut sheet form**:



The SELECT, ALERT, and CUT SHEET LAMPS blink

If you see this error indication while using the sheet feeder, **PRESS THE FF SWITCH TO LOAD A NEW SHEET**. If you see this indication while operating in manual cut sheet mode, **REMOVE THE FORM and LOAD A NEW FORM** using the CUT SHEET INSERT switch.

The following display indicates **one or more of the print wires is not firing properly**:



The DSR LAMP blinks

If you see this error indication, **REPLACE THE PRINTHEAD**.

PRINTING/PAPER HANDLING PROBLEMS

The chart below lists common printer problems and measures which often correct the problems. If you encounter a problem which you can't correct after using the information in the chart, refer to the **CALLING FOR SERVICE** section of this manual.

PROBLEM	CORRECTIVE MEASURES
The printer does not work and the POWER light is off.	<ul style="list-style-type: none"> • Make sure the power cord is plugged into both the printer and an ac outlet, and that the POWER switch is set "ON."
The POWER light is "ON" but the printer will not print data.	<ul style="list-style-type: none"> • Press the SELECT switch to turn on the SELECT light and place the printer on line. • Be sure the forms lever is not set to "LOAD" position. THE PRINTHEAD WILL NOT MOVE IF THE FORMS LEVER IS IN "LOAD" POSITION. • Ensure the top cover is closed.
If print is too light	<ul style="list-style-type: none"> • Set the printhead adjustment lever closer to the back of the printer. • Replace the ribbon cassette.
If print is too dark, or smudging occurs	<ul style="list-style-type: none"> • Set the printhead adjustment lever closer to the front of the printer.
No print or erratic printing.	<ul style="list-style-type: none"> • Set the printhead adjustment lever closer to the back of the printer. • Ensure the printhead finger board connector is firmly connected. • Clean dirty carriage guide bars.

PRINTING/PAPER HANDLING PROBLEMS (cont)

PROBLEM	CORRECTIVE MEASURES
Dots are missing on all characters.	<ul style="list-style-type: none">• Ensure the printhead finger board connector is firmly connected.• Replace the printhead.
Dots are missing on certain characters only.	<ul style="list-style-type: none">• Call for service.
Line across page.	<ul style="list-style-type: none">• Set the printhead adjustment lever closer to the front of the printer.
Paper is getting torn or is not moving properly (jamming, skewing).	<ul style="list-style-type: none">• Make sure paper holes are aligned properly on tractor feed pins.• Make sure tractors are far enough apart to prevent paper buckling.• Set the printhead adjustment lever closer to the front of the printer.• Set the forms lever to "SHEET" if using sheets, or to "FORMS" if using fanfold forms.

CALLING FOR SERVICE

Centronics provides both “on-site” and “service-center based” servicing.

On-Site Service

For direct, on-site service, call the following toll free number:

1-800-258-1952

Calling this number will put you in contact with the central dispatch unit of the Centronics On-Site service organization, which maintains bases in over 40 locations across the United States. You will be serviced from the base closest to your installation.

Walk-In Service Centers

Centronics maintains a number of “walk-in service centers” across the United States. The service centers provide outstanding service at low cost. Centers are manned by factory trained technicians whose expertise guarantees fast, dependable service.

Walk-In service centers are maintained in the following locations:

CALIFORNIA

- Los Angeles/Irvine
(714) 261-9444
- San Francisco/Sunnyvale
(408) 745-7040

FLORIDA

- Miami
(305) 621-0125

GEORGIA

- Atlanta
(404) 447-6530

ILLINOIS

- Chicago/Arlington Heights
(312) 956-6141

NEW HAMPSHIRE

- Hudson
(603) 883-0111, X4227

NEW YORK

- NYC/Syosset
(516) 931-8620

PENNSYLVANIA

- Philadelphia/
Mt. Laurel, NJ
(609) 234-8194

TEXAS

- Dallas/Arlington
(817) 461-7121

REFERENCE MANUALS

The following publications are recommended to those who will program or service the Model 354 printer. The publications may be purchased at Centronics Sales & Service Walk-In Centers, or may be ordered using the order form provided at the back of this manual.

Model 354-1,-2 Technical Manual Package (P/N 37403440-6001)—

Includes the following three manuals:

- **MODEL 354-1,-2 GENERAL TECHNICAL MANUAL**—Provides a general description of the printer and how it operates. Includes printer specifications, maintenance, and a description of field installable options.
- **MODEL 354-1,-2 PRINTER MECHANISM TECHNICAL MANUAL**—Contains procedures for the removal and the replacement of many printer assemblies and piece parts, including recommended spare parts.
- **MODEL 354-1,-2 CPU/PRINT CONTROLLER TECHNICAL MANUAL**—Describes printer electronics, and includes a detailed theory of operation, an electrical parts breakdown for each pcb, a pcb revision history, and schematic and assembly drawings of the pcbs.

Model 354-1,-2 Operators Manual Package (P/N 37403441-6001)—

Includes one heavily illustrated manual describing the installation, operation, and maintenance of the Model 354 printer. This basic reference manual includes step-by-step procedures for routine operations such as paper loading, ribbon replacement, impression adjustment, and use of the control panel switches. A troubleshooting guide is included in the manual.

Model 354-1,-2 Illustrated Parts Manual Package (37403442-6001)

Consists of one illustrated parts manual that contains illustrations and lists of materials of all printer assemblies and subassemblies down to the piece part level. The manual also contains an index listing all printer parts in numerical order.

Model 354-1,-2 Programmers Manual Package (P/N 37403443-6001)

Consists of one manual that identifies printer functions and features that can be controlled from the host device. Includes a description of control codes and escape sequences that are valid for the Model 354.

REFERENCE MANUALS (cont)

Model 354-1,-2 Options Manual Package (P/N 37403444-6001)

Consists of one manual that contains information about each optional electronic module for the Model 354-1,-2 printer. Modules expand the capabilities of the printer and may effect certain operating procedures. The options manual package describes the modules, provides schematics/assembly diagrams, lists module parts, and explains how modules are installed. The options manual also describes operating procedures that are peculiar to the modules.

Auto Sheet Feeder Reference Manual Package (P/N 37403506-6001)

Includes one manual which includes general information about the automatic sheet feeder, a theory of its operation, procedures for installing the sheet feeder, and instructions for loading paper and envelopes into the sheet feeder.

OPTIONS/ACCESSORIES ORDER FORM MODEL 354-1,-2 PRINTER

CENTRONICS PART NUMBER	OPTION / ACCESSORY DESCRIPTION	QUANTITY ORDERED	PRICE*	TOTAL PRICE
37403441-6001	Model 354-1,-2 Operators Manual Package			
37403440-6001	Model 354-1,-2 Technical Manual Package			
37403442-6001	Model 354-1,-2 Illustrated Parts Manual Package			
37403443-6001	Model 354-1,-2 Programmers Manual Package			
64000546-6001	60/50 Hz Conversion			
39620034-1001	Standard Parallel Cable			
39620033-1001	RS232 Cable			
39620035-1001	IBM to Centronics Parallel Cable			
81100000-6170	Universal Print Stand			
64000520-6001	Ribbon Cassette, 70 yd., 4-pack			
63002399-6001	Tool Kit			
63180315-5002	Replaceable Print Head			
63180315-5102	Replaceable Print Head			
64000819-2001	Demand Document Window Tear Bar			
64000925-6001	Table Top Forms Stacker Kit			

* For pricing contact the Customer Spares Department
Centronics Data Computer Corp.
1 Wall St., Hudson, NH 03051
(603) 883-0111

SALES TAX
ORDER TOTAL

SHIP TO:

Dept. _____ Phone Number _____
Firm Name _____
Address _____
City _____ State _____ Zip _____
Customer Number _____ Purchase Order Number _____
Ordered by _____

BILL TO: (if different from "SHIP TO")

Dept. _____ Phone Number _____
Firm Name _____
Address _____
City _____ State _____ Zip _____
Customer Number _____
Attention of _____

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UPS COD CHECK ENCLOSED (We pay freight) BILL ME (Current CDCC customers only)

PAYMENT TERMS:

For orders less than \$100.00:

Will be shipped UPS COD; unless payment for the full amount of the order, including sales tax, is enclosed.
With prepayments, we pay the shipping costs.

For orders in excess of \$100.00:

Same terms as above; or, if you currently have an account with Centronics, we can bill you.



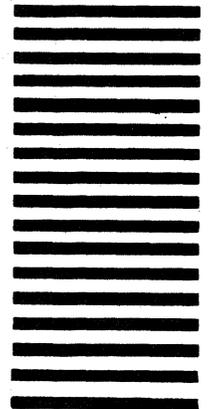
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Centronics Data Computer Corp.
1 Wall Street
Hudson, New Hampshire 03051



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READERS COMMENTS

Publications Title MODEL 354 OPERATORS MANUAL

Publications No. 37403441-9A00 Revision A Date JULY 1984

List PCP's, if any, received with manual: _____

Name _____ Company _____

Address _____ City _____ State _____ Zip _____

The intent of this manual is to provide accurate and meaningful information to help you properly operate and efficiently maintain equipment manufactured by Centronics Data Computer Corp. To this end, we welcome your comments regarding any errors, discrepancies or omissions you may have discovered, or any suggestions for improving the overall manual. This postage-paid form is provided for your convenience. Your comments will be appreciated and should be a useful input at the next revision of this manual.

TECHNICAL OR CLERICAL ERRORS:

(Specify Page Numbers)

SUGGESTIONS FOR IMPROVEMENT:

CENTRONICS
data computer corp.
Hudson, New Hampshire 03051
Telephone (603) 883-0111

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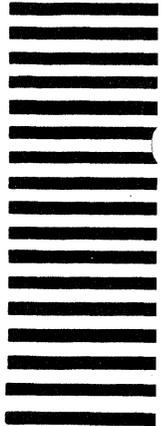
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