0789 Printer

Operator Reference

The statement below is included in this manual to comply with a Federal Communications Commission (FCC) Regulation. The FCC is an agency of the United States government; thus, the statement below applies to computing equipment installed in the United States of America. Sperry is taking appropriate steps to be in compliance with FCC regulations and similar regulations of other countries.

WARNING: This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference.

Compliance is based upon a system configuration that includes SPERRY peripherals/subsystems so labeled, and cables furnished by Sperry or built to Sperry specifications and assembly procedures.

PAGE STATUS SUMMARY

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Part/Section	Page Number	Update Level
Cover/Disclaimer		
PSS	1	
Contents	1 thru 3	
1	1 thru 3	
2	1	
3	1 thru 7	
4	1 thru 24	
5	1, 2	
Index	1 thru 3	
User Comment Sheet		

Part/Section	Page Number	Update Level

Part/Section	Page Number	Update Level

All the technical changes are denoted by an arrow (→) in the margin. A downward pointing arrow (⇃) next to a line indicates that technical changes begin at this line and continue until an upward pointing arrow (⇂) is found. A horizontal arrow (→) pointing to a line indicates a technical change in only that line. A horizontal arrow located between two consecutive lines indicates technical changes in both lines or deletions.
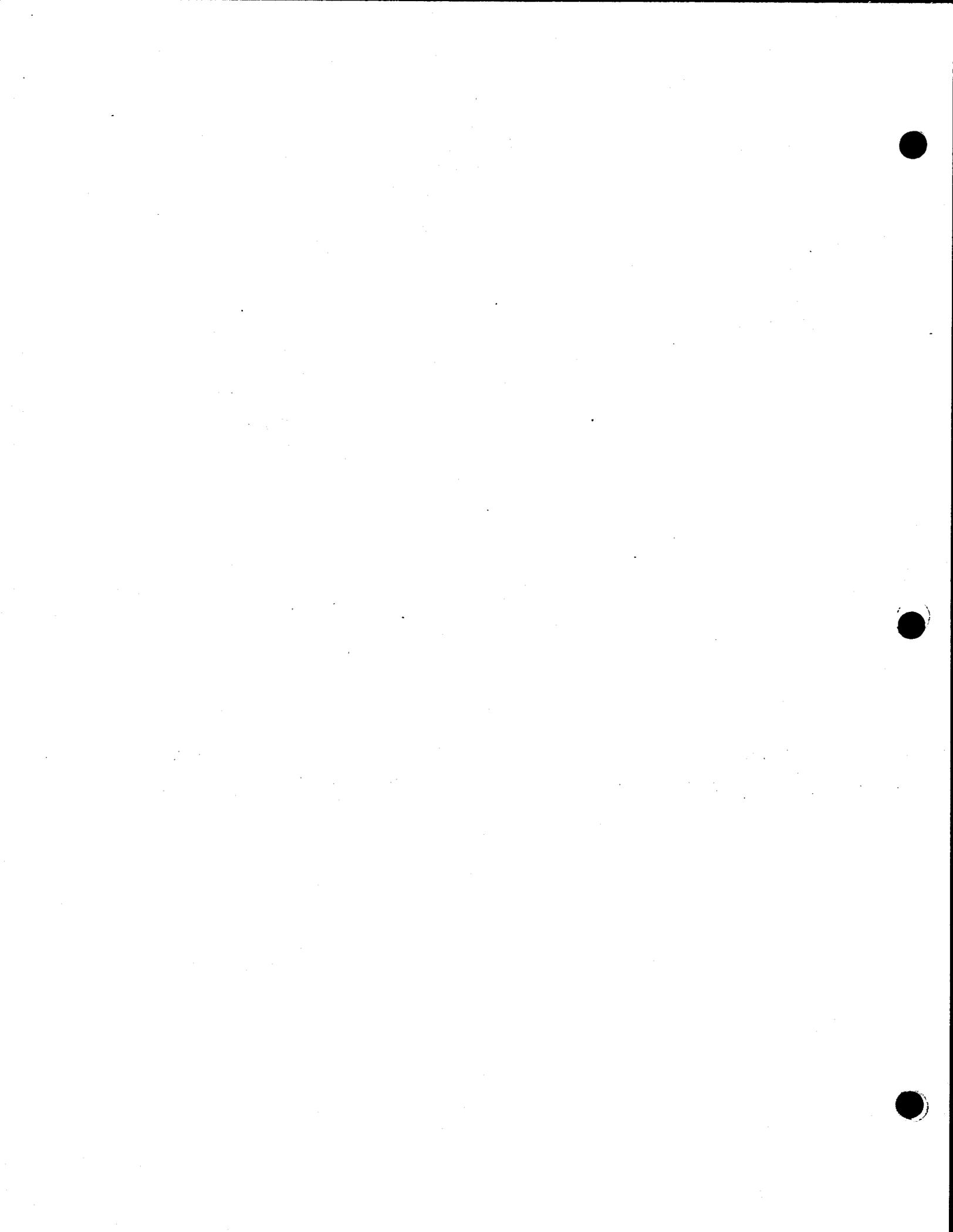
Contents

ACRONYM TEXT

PAGE STATUS SUMMARY

CONTENTS

4. OPERATION

5. OPERATOR-PERFORMED MAINTENANCE

INDEX

USER COMMENT SHEET

FIGURES

TABLES

1. Introduction

1.1. GENERAL DESCRIPTION

The SPERRY 0789 Printer (Figure 1–1) is a freestanding line printer designed to operate at print rates of 180, 300, or 640 lines per minute (lpm). The printer has a standard 132-column print line. One print control buffer is provided with the subsystem. The print line buffer stores character codes before printing.

The printer comprises a print mechanism, actuator driver electronics, power supply, forms feed control, interface electronics, power control, operator control panel, and printer enclosure. Overall size of the printer is 42 inches (106.7 cm) high, 32 inches (87.3 cm) wide, and 31 inches (78.7 cm) deep.
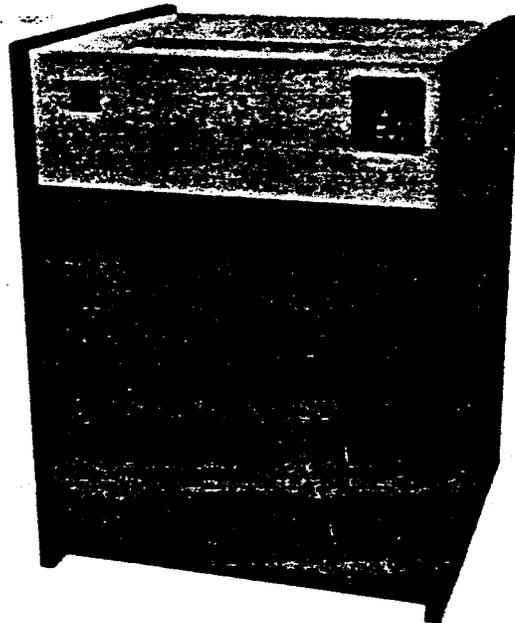
Figure 1–1. 0789 Printer

The type media is a flexible metal band with etched characters. The band moves continuously in a horizontal direction traversing the column positions. Printing occurs asynchronously (not dependent on the initial position of the moving print band) when a selected character lines up with a selected column position. The print band and inked ribbon can be changed by the operator.

Printers may be used in remote applications up to 5000 feet (1.5 km) from the processor in conjunction with a remote adapter for some host systems. The 0789 printer is provided with up to three preselected programmable read-only memories (PROMs) and two associated print bands for each PROM. Print bands may be changed by the operator; however, PROMs can be changed only by a Sperry customer engineer.

The print bands available for the 0789 printer are listed in Table 1–1.

Table 1–1. Print Band Selection (Part 1 of 2)

Band Description	Character Set
Modified ASCII, 77L	64
Business	48
Finland/Sweden	48
Finland/Sweden	64
Modified FORTRAN, 77L	63
ASCII	95
ASCII LIBRA	64
Scientific	48
Universal OCR–B (ISO)	68
Universal OCR–B (ECMA II)	68
United Kingdom	48
Denmark/Norway	48
Denmark/Norway	63
Finland/Sweden	96
Universal OCR, H–14	68
Katakana (Japan)	128
Universal OCR–A	71
Katakana (Japan)	128
Universal, 77L	68
COBOL/FORTRAN Business	58
COBOL/FORTRAN Scientific	52

Table 1-1. Print Band Selection (Part 2 of 2)

Band Description	Character Set
International Set	
Denmark/Norway	48
Denmark/Norway	64
Denmark/Norway	96
Finland/Sweden	96
France	64
France	96
Germany	64
Germany	96
Italy	64
Italy	96
Spain	64
Spain	96
United Kingdom	48
United Kingdom	64
United Kingdom	96

NOTE:

Each of the above print bands requires a different programmable read only memory (PROM).

1.2. FUNCTIONAL COMPONENTS

The 0789 printer contains seven major components:

■ Print band

■ . Print band drive

■ Inked ribbon

■ Forms feed

■ Print hammer and actuator assembly

■ Power supply

■ Control electronics
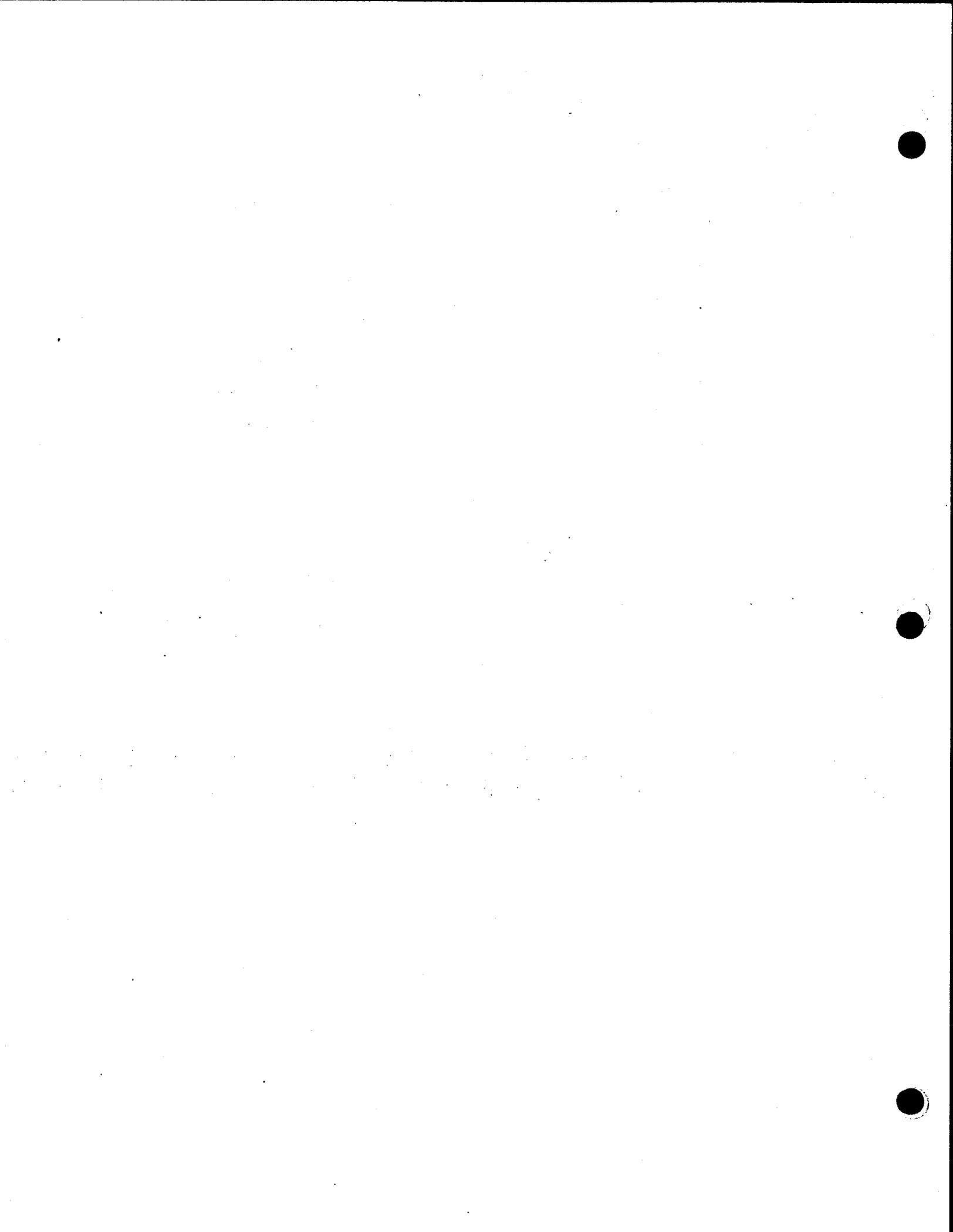
2. Operator Responsibilities

The operator is responsible for preparing the 0789 printer for operation and for performing the routines required for efficient operation.

To assume such responsibilities, the operator must:

- know the location and function of all printer controls and indicators;

- turn the printer on and off as required;

- load and unload forms;

- replace the ribbon;

- change the print band;

- adjust character registration;

- clean the print band and, in general, the printer;

- correct some faults and recover from unscheduled stops; and

- maintain the printer according to the procedures presented in this manual.
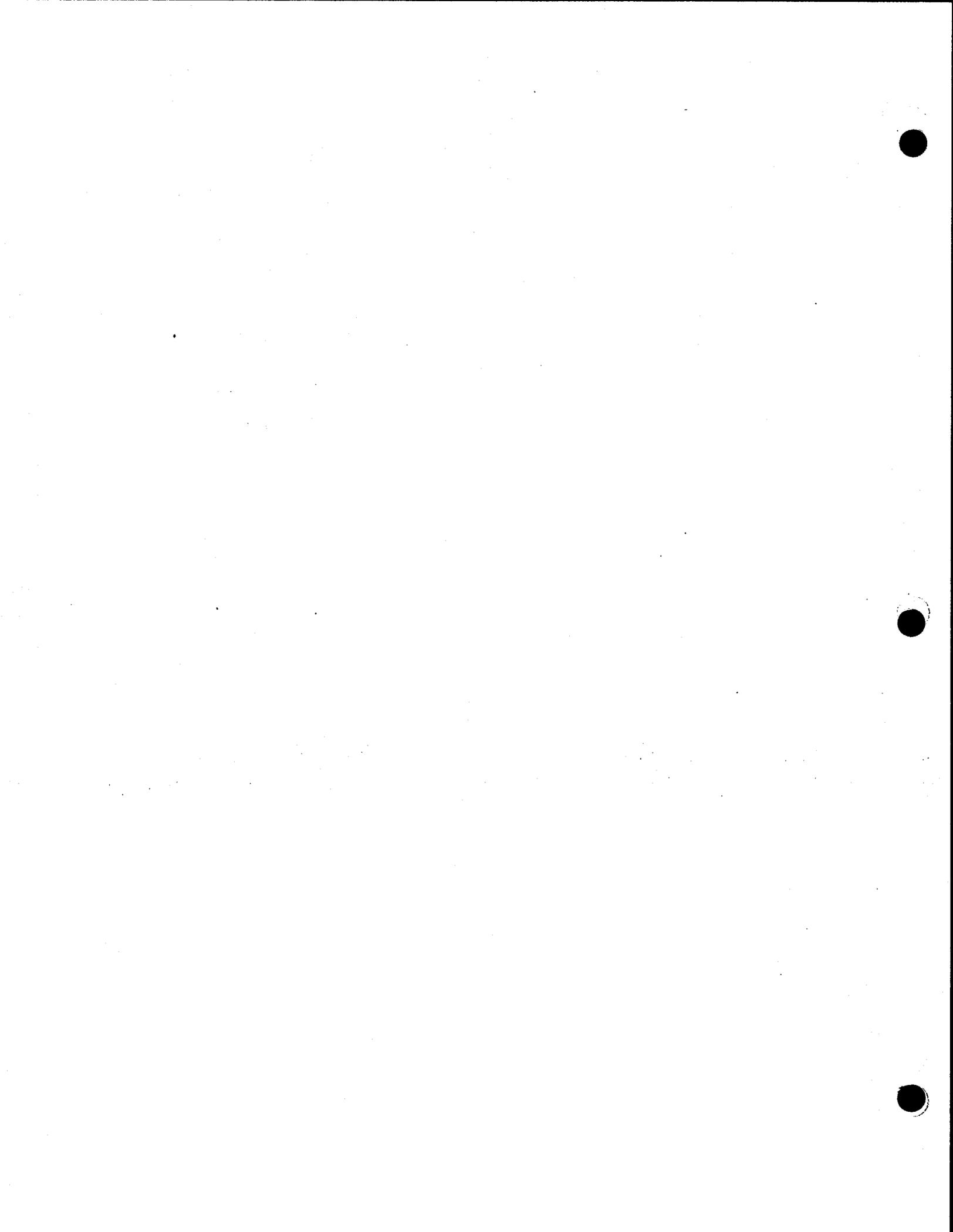
3. Controls and Indicators

3.1. OPERATION AND USE

Control switches and indicators used by the operator are located on the operator control panel (Figure 3-1). Controls and switches used during operation are accessible when the cover is closed, while other operator controls are accessible only when the cover is raised. The main POWER ON/OFF switch is located under the lower right corner of the printer case.

3.2. OPERATOR CONTROL PANEL

Operator controls and switches are grouped together at the right front of the printer (Figure 3-1). Table 3-1 lists the operator controls and their functions.

Figure 3-1. Operator Control Panel

Table 3-1. Operator Control Panel Switches and Indicators

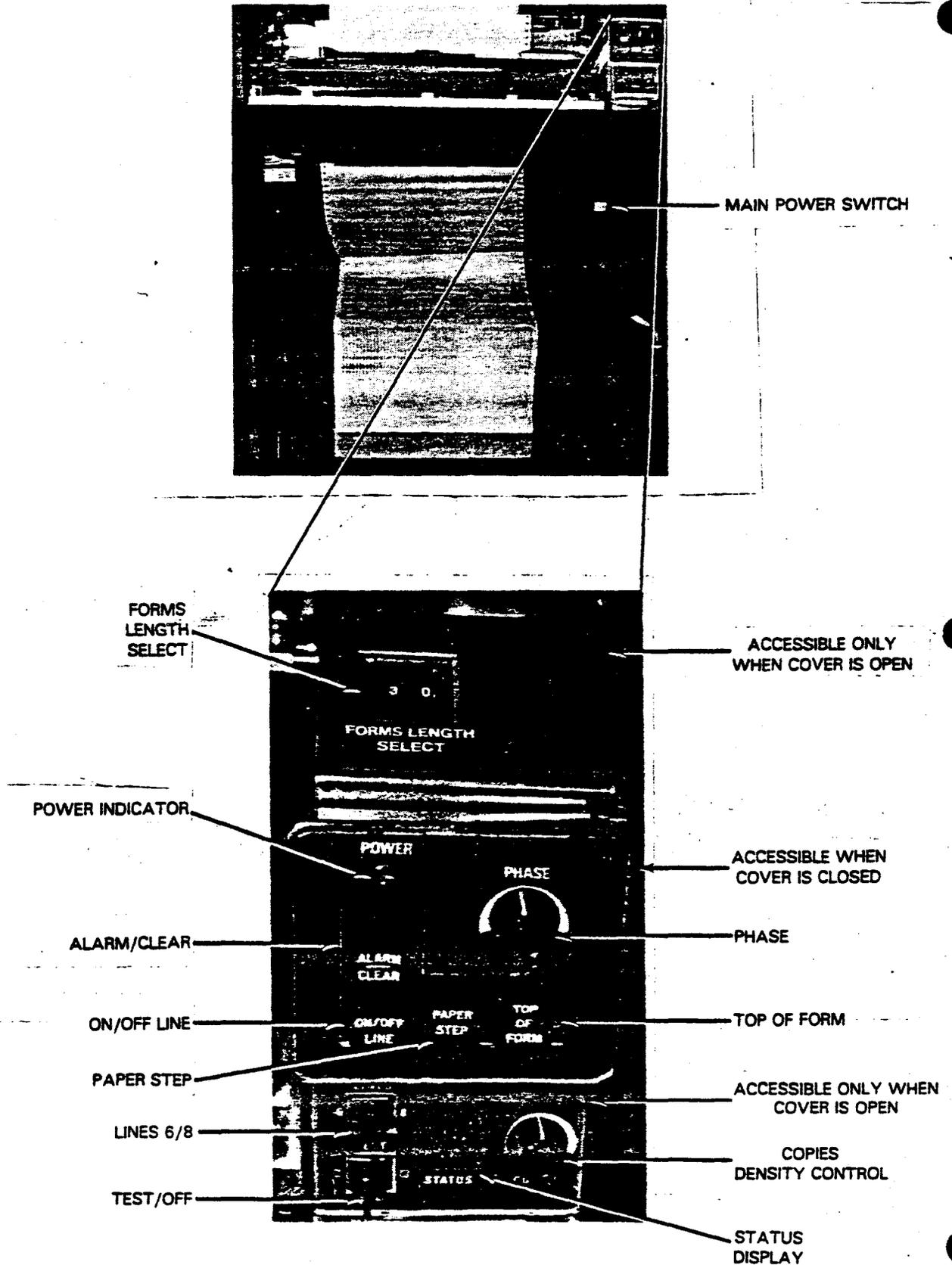| Switch/Indicator	Function
Cabinet Mounted	
POWER ON/OFF switch	Rocker type switch that controls ac power to the printer.
Externally Accessible	
ON/OFF LINE switch/indicator	Lights when printer is in ready condition and on line. Pressing switch alternately places the printer in the online and offline mode. If the TEST switch is set to either the left or right position, pressing the ON/OFF LINE switch alternately places the printer in and out of self-test mode. The ON/OFF LINE indicator is lit when the printer is in the self-test mode; however, the READY signal remains inactive.
ALARM/CLEAR switch/indicator	Lights during power up or to indicate a fault condition. A specific error condition is identified by the STATUS indicator display. Pressing this switch clears printer logic.
PAPER STEP switch	Momentary switch used to advance the forms one line at a time when printer is in offline mode. When pressed and held, printer feeds the forms continuously until the switch is released.
TOP OF FORM switch	Momentary switch used to advance the forms to the top-of-form position of the next form when in online mode.
PHASE control	Potentiometer used to maintain equal density at the left and right sides of the characters.
POWER indicator	Lights when main power switch is set to 1 (ON) position and power is turned on.
Internally Accessible	
FORMS LENGTH SELECT switch	A thumbwheel switch used on some models to set the default length of the form. This switch is calibrated in inches.
LINES 6/8 switch	A 2-position switch that enables the selection of either 6 or 8 lines per inch vertical printing density.
TEST/OFF switch	A 3-position switch for exercising the printer self-test function. Setting the switch to the right ▨ position and pressing the ON/OFF LINE switch causes the printing of a 132-column sliding pattern; setting the switch to the left ▥ position and pressing the ON/OFF LINE switch causes the printing of a fixed vertical pattern. The POWER ON/OFF LINE switch must be pressed to stop either pattern.
STATUS display	A 2-digit alphanumeric readout display code indicating either the major function being performed by the printer or an existing fault condition.
COPIES control	A potentiometer that varies hammer drive to optimize print quality when printing on forms of various thicknesses. The lowest setting should be used whenever possible to maximize ribbon, band, and printhammer life.

3.3. FORMS ALIGNMENT GUIDES

Two forms alignment guides are located at the print station of the printer: a horizontal line scale and a vertical column scale and platen. See Figure 3–2. The rear guide is the horizontal line scale with parallel lines that extend across the width of the scale, enabling the operator to align the forms print lines with the lines on the horizontal scale. The front guide is the vertical column scale used to align the forms print columns with the guide marks on the vertical column scale.

HORIZONTAL LINE
SCALE

VERTICAL
COLUMN SCALE
AND
PLATEN
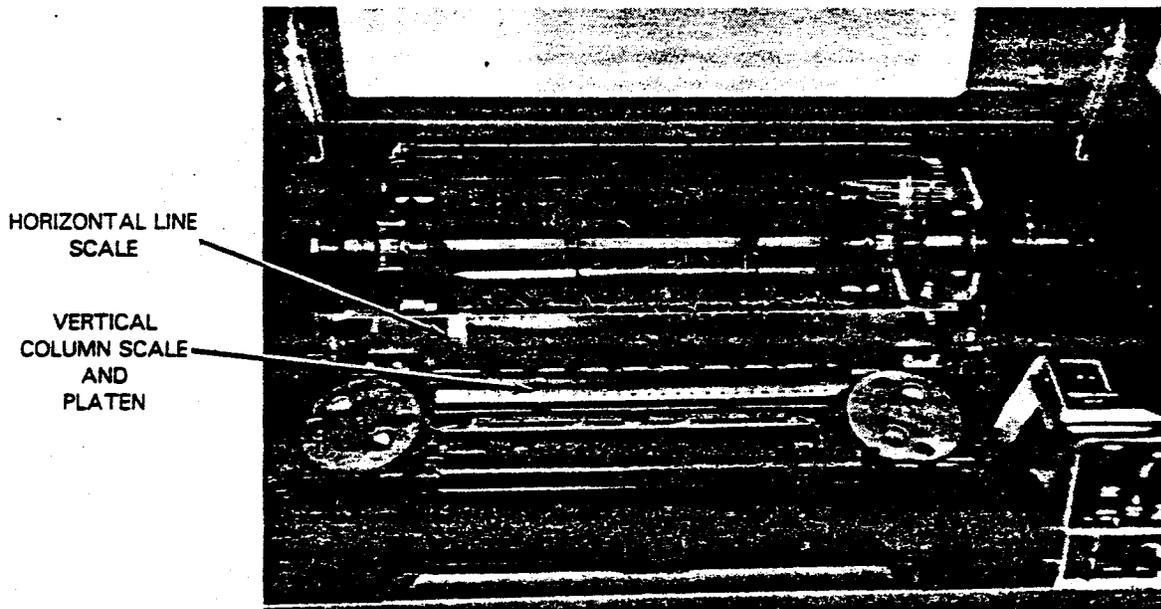
Figure 3–2. Forms Alignment Guides

3.4. PAPER CONTROLS

The printer paper controls, Figure 3-3, include the drives and levers used to handle the paper forms. These include:

■   Tractor sprockets

■   Paper feed release lever

■   Vertical paper adjust knob

■   Hammer bank latch lever

■   Print band tension lever

3.4.1. Tractor Sprockets

The printer contains two tractors (pinwheel sprockets) located above the print area, which engage the perforations along the outer edges of the forms so that they may be moved through the printer line by line.

These tractors can be moved horizontally along the square drive shaft to accommodate varying form widths and to align the forms print columns with the proper print column positions. The tractors are released by squeezing the split-knob tractor sprocket locks located on the outside of each tractor and moving the tractor in the direction required. Releasing the sprocket locks engages the tractors to the square drive shaft.

A sprocket pin cover keeps the forms from slipping from the tractor sprocket pins during operation. See Figure 3-3.

Figure 3-3. Paper Controls

3.4.2. Paper Feed Release Lever

The paper feed release lever is located at the right end of the square drive shaft (Figure 3–3); the lever, when turned over, releases the drive mechanism from the square drive shaft, enabling the forms to be moved in a vertical direction for adjusting the proper print line position. When the green numeral 1 is visible, the clutch mechanism is engaged with the square drive shaft containing the tractor sprockets. When the red numeral 0 or red label is visible (adjust position), the clutch mechanism is disengaged from the square drive shaft containing the tractor sprockets.
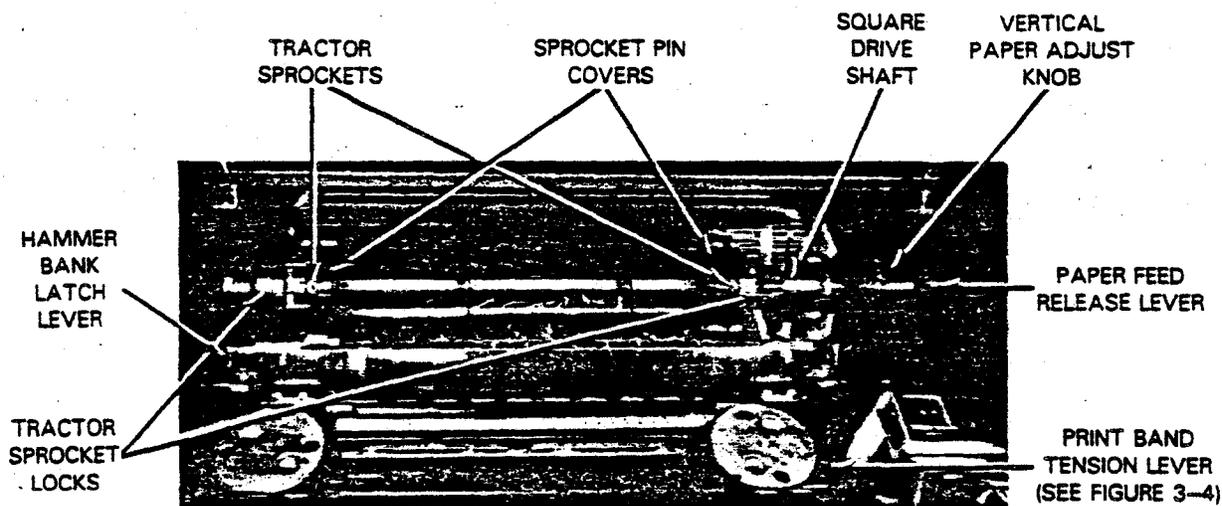
3.4.3. Vertical Paper Adjust Knob

The vertical paper adjust knob is located at the right end of the square drive shaft (Figure 3–3). This knob is used to rotate the shaft on which the tractor sprockets are mounted, permitting manual adjustment of the paper up and down after the paper feed release lever is actuated.

3.4.4. Hammer Bank Latch Lever

The hammer bank latch lever is located to the left of the horizontal line scale (Figure 3–3). When this lever is lifted, the hammer bank is moved to the rear, opening the forms throat (print station).

3.4.5. Print Band Tension Lever

The print band tension lever is located to the right of the print band right idler pulley wheel. It is a small lever accessed by raising the print band cover. See Figure 3–4. This lever releases the tension on the print band idler pulley wheel and is used when removing or replacing the print band. The lever is moved toward the rear to release tension on the print band.

PRINT BAND
TENSION LEVER
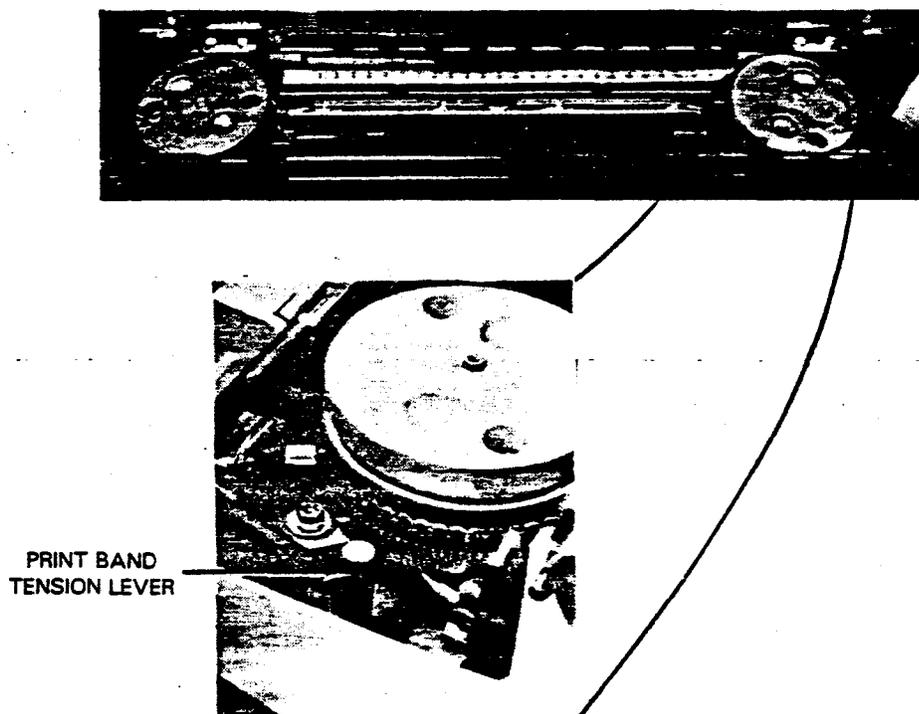
Figure 3–4. Print Band Tension Lever

3.5. MODE SELECT AND DEVICE SELECT SWITCHES

The MODE SELECT and DEVICE SELECT switches (Figure 3—5) are located in the lower right rear of the cabinet.

3.5.1. MODE SELECT Switches

The MODE SELECT switches (S1 and S2) determine the printer mode of operation. When S1 and S2 are all set to the 1 (up) position, the printer is set for mode 1 operation. When S1 and S2 are all set to 0 (down) position, the printer is set for mode 2 operation. These switches are set at the site based on the local operating configuration.

3.5.2. DEVICE SELECT Switches

The DEVICE SELECT switches (S3) are used to set the printer address determined by the position of the printer in the *daisy chain*. For example, if the printer is in position 1 of the *daisy chain*, set DEVICE SELECT switch 1 to the 1 (up) position, the remaining switches set to 0 (down) position. If the printer is in position 2 of the *daisy chain*, set switch 2 to the (up) position, the remaining switches set to 0 (down) position. Switches 3 and 4 set when the printer is in position 3 and 4, respectively, in the daisy chain.

Switch postion 5, when set to 1 (up) position, permits the printer to return the carriage with each line feed. When set to 0 (down) position, permits the carriage to return without a line feed.

Switches 6, 7, and 8 of S3 are not used, and can be disregarded.
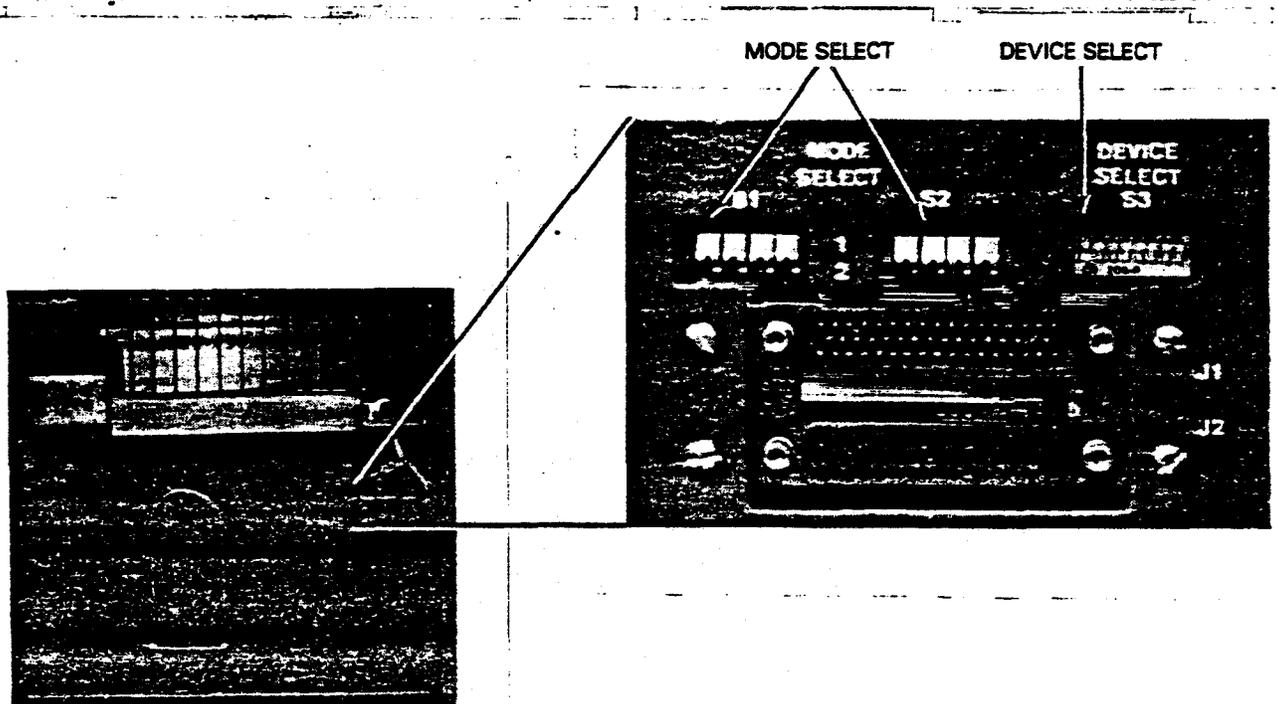
Figure 3—5. MODE SELECT and DEVICE SELECT Switches
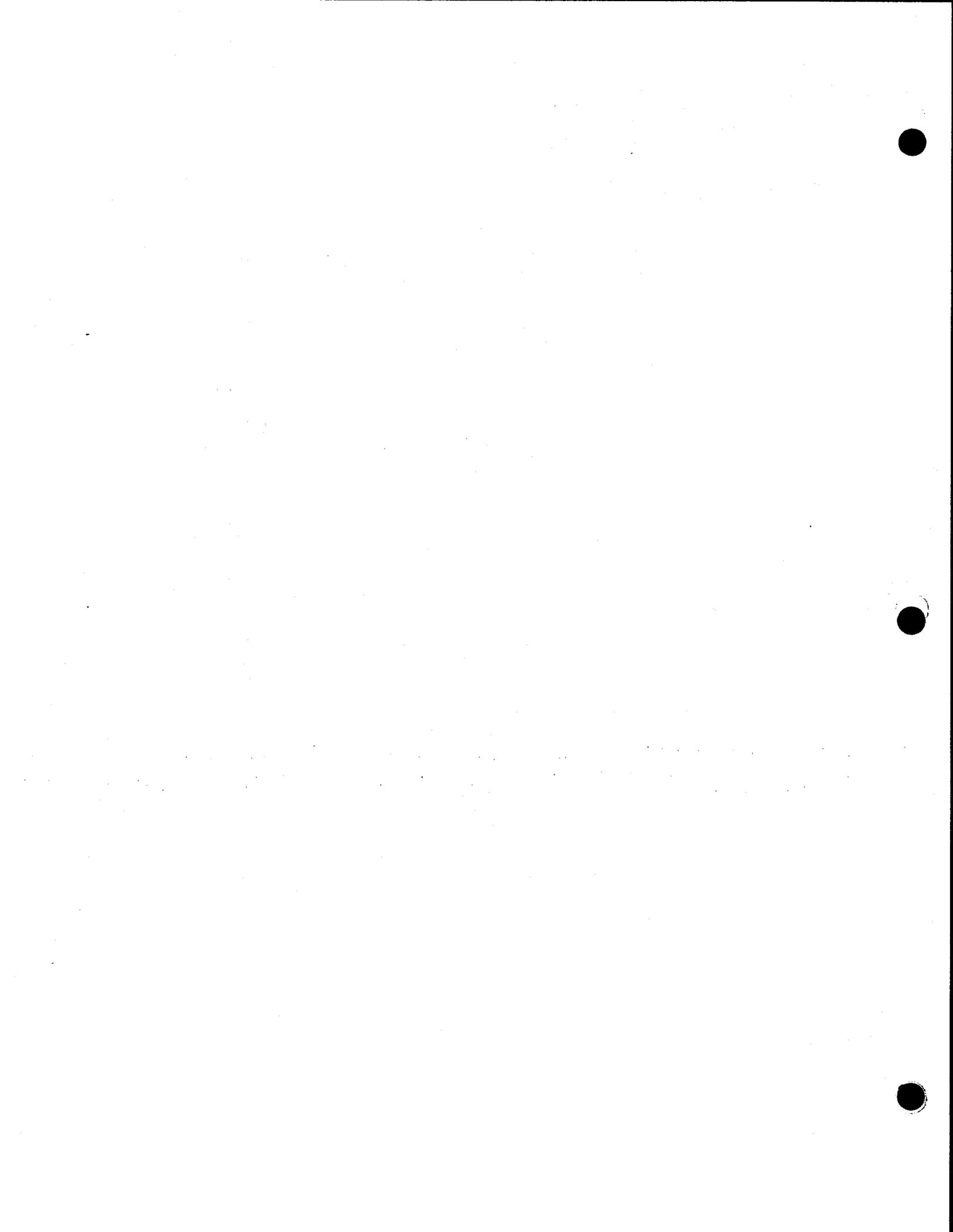
4. Operation

4.1. OPERATING PROCEDURES

Proper operation of the 0789 printer includes the following procedures:

- Turn-on

- Turn-off

- Mode select and device select switch settings

- Forms loading

- Forms unloading

- Inked ribbon replacement

- Print band removal and replacement

- Horizontal forms adjustment

- Vertical forms adjustment

- Print density adjustment

- Print phasing adjustment

- Operator recovery procedures

4.2. TURN-ON PROCEDURE

During normal operating conditions, printer power is initiated at the printer except when controlled by the host system. After initial turn on, power to the printer remains on unless an interruption occurs due to a power failure or maintenance is required on the printer.

4.2.1. Turn-on Procedure after External Power Failure

If a power failure occurs, set the POWER ON/OFF switch to the OFF position. When ac power is restored, set the POWER ON/OFF switch to the ON position; the POWER and ALARM/CLEAR indicators on the operator control panel light. After the power up sequence is completed and a delay of approximately 3 seconds, the ALARM/CLEAR indicator extinguishes.

4.2.2. Initial Turn On

Before turning on power to the printer, make certain the forms are properly loaded, the inked ribbon is properly installed, and the TEST switch is in the OFF position.

To turn on the printer when power is controlled at the printer site:

1.   Set the POWER ON/OFF switch (Figure 4-1) to the ON position (lower right front door must be opened to operate POWER ON/OFF switch).

POWER ON(1)
OFF(2) SWITCH
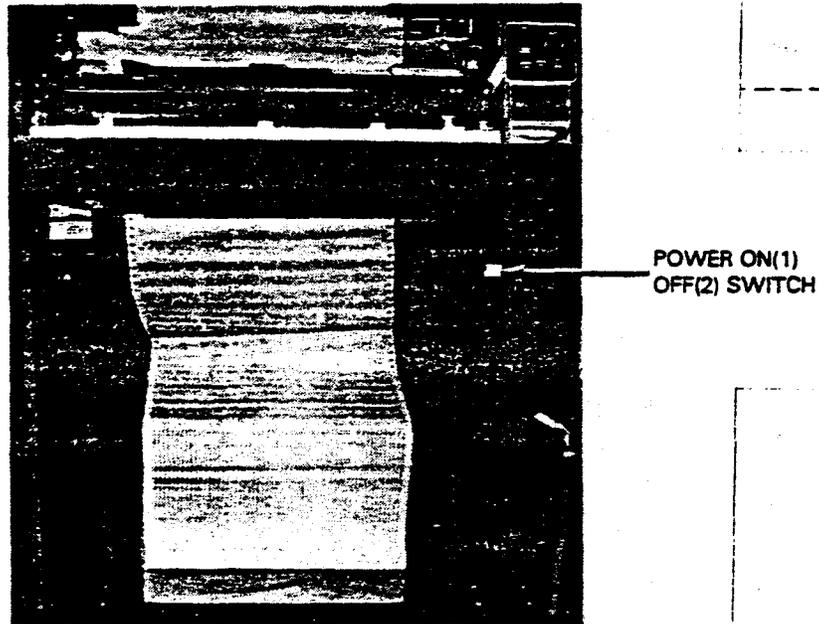
Figure 4-1. 0789 Printer POWER Switch Location

2.   At the operator control panel, ascertain that the POWER and ALARM/CLEAR indicators light immediately. After approximately 3 seconds, the ALARM/CLEAR indicator extinguishes and the POWER indicator remains lit. If the ALARM/CLEAR indicator does not extinguish, refer to the status indicator and correct the error, if possible.

4.3. TURN-OFF PROCEDURE

In system installations, power is turned off as follows:

1.   Ensure that the ON/OFF LINE indicator is extinguished. If it is not extinguished, press the ON/OFF LINE switch once.

2.   Set the POWER ON/OFF switch to the OFF position.

3.   Ascertain that the POWER indicator is extinguished.

4.4. MODE SELECT AND DEVICE SELECT SWITCH SETTINGS

The mode select and device select switches determine control unit operation and printer address designation, respectively. When these switches are supplied with the printer, ensure that they are positioned as follows:

■ When used with UTS 4000, the switches should be positioned as illustrated.

If all switches on blocks S1 and S2 [B2-A] are preset to the 2 (off) position (Mode 2), they will appear as follows:

Mode 2 Switch Settings
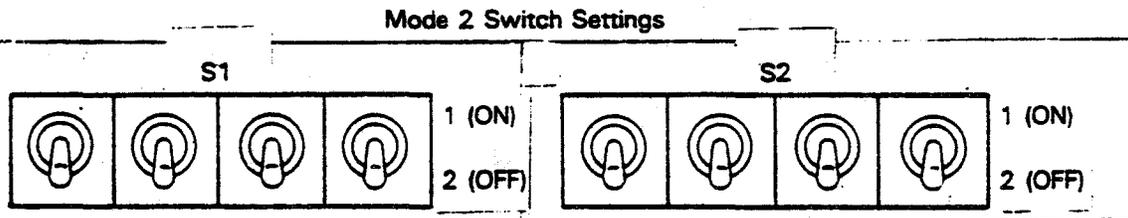
In this event, set switches 1 through 4 on DEVICE SELECT switch block S3 for the device address for Mode 2 as follows:

Device Select S3 Switch Settings for Mode 2
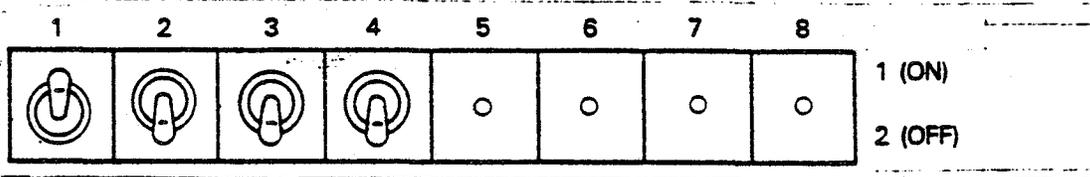
If you want the printer to start a new line when it receives the carriage return control code, then set switch 5 on DEVICE SELECT switch block S3 to 1 (on) as follows:

Switch Setting for Carriage Return with Line Feed:
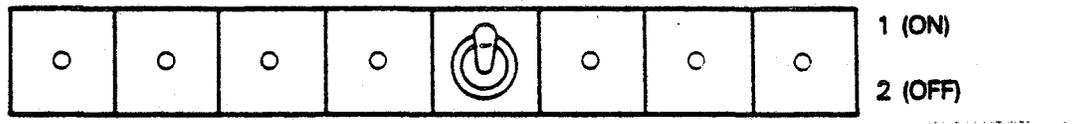
Otherwise, if you want a carriage return without moving to a new line, set switch 5 on DEVICE SELECT switch block S3 to 2 (off):

Switch Setting for Carriage Return without Line Feed

NOTE:

Switches 6, 7, and 8 on DEVICE SELECT switch block S3 are not used, so they can be disregarded.

■ When used with a system other than the UTS 4000, the switches should be positioned as illustrated.

1.   Determine the position of the 0789 printer in the "daisy chain" connections for peripheral devices in the host system.

2.   Open the rear cabinet door and locate the mode switch and interface connector board at the lower right rear of the printer cabinet. Locate the switch blocks labeled MODE SELECT S1 and S2 and DEVICE SELECT mounted on the board.

3.   Note the position of the switch settings on MODE SELECT blocks S1 and S2. If the switches on both blocks are present to the 1 (on) position (Mode 1), they appear as follows:

Mode 1 Switch Settings

S1

1	2	3	4

1(ON)

2(OFF)

S2

1	2	3	4
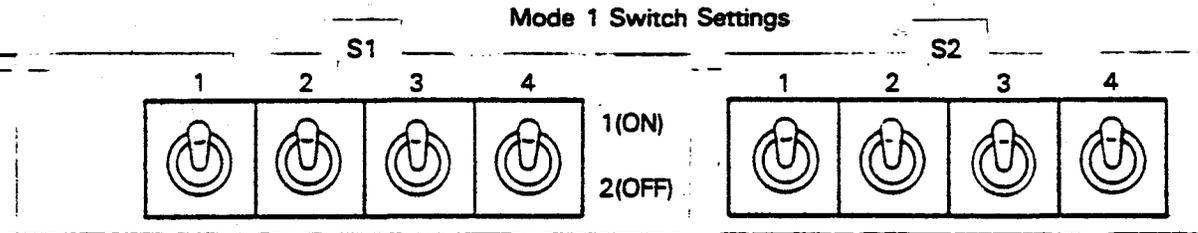
In this event, then set switches 1 through 4 on DEVICE SELECT switch block S3 for an address according to its position on the daisy chain as follows:

Address 1

1	2	3	4	5	6	7	8

1 (ON)

2 (OFF)

Address 2

1	2	3	4	5	6	7	8

1 (ON)

2 (OFF)

Address 3

1	2	3	4	5	6	7	8

1 (ON)

2 (OFF)

Address 4

1	2	3	4	5	6	7	8

1 (ON)

2 (OFF)
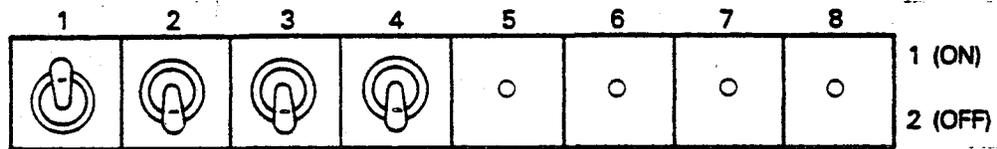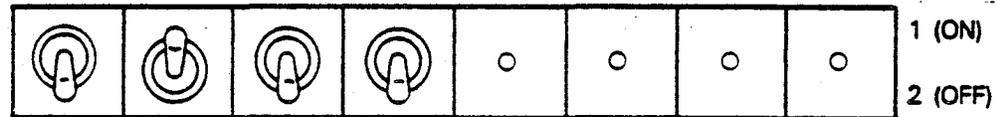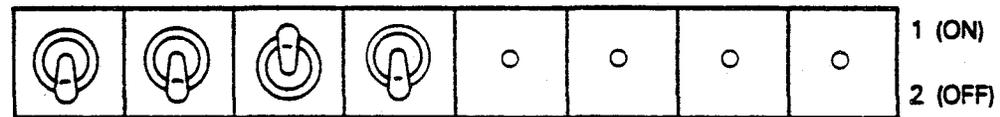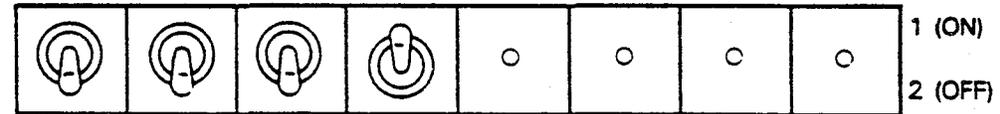
4.5. FORMS LOADING

Forms used with the 0789 printer must meet the requirements specified in the media and expendable supplies manual. Load forms per the following procedure.

1.   Open the printer front cabinet door.

2.   Set the POWER ON(1)/OFF(0) switch (Figure 4-1) to ON(1).

3.   Verify that the POWER indicator on the operator panel (Figure 4-2) lights. The ALARM/CLEAR switch-indicator should light briefly and darken after about 3 seconds.
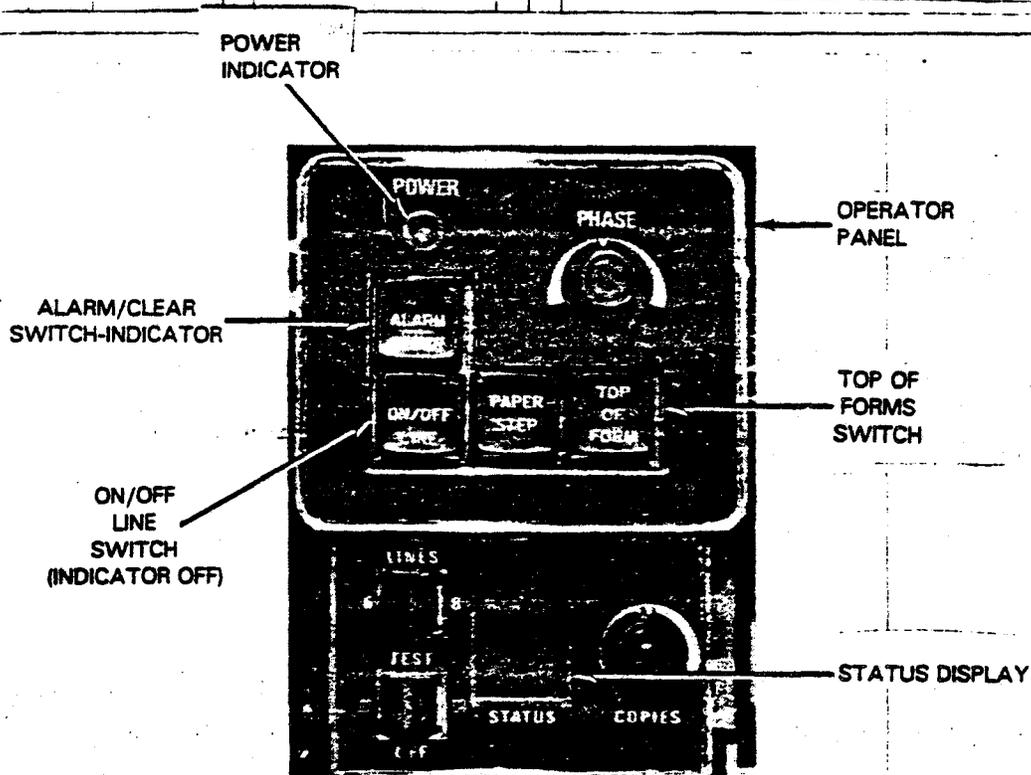
Figure 4-2. Printer Offline Controls and Indicators

NOTE:

If the ALARM/CLEAR switch-indicator stays on, note the numbers shown on the STATUS DISPLAY (Figure 4-2), and refer to Table 4-1 for error recovery procedures.

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WARNING
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Keep your hands, clothing, and jewelry clear of the printer mechanism while power is on.

4.   Press the ON/OFF switch (Figure 4-2) to set an offline condition (indicator off).

5.   Press the TOP OF FORMS switch to electrically set up the top-of-form reference.

6.   Flip open the paper feed release lever (Figure 4-3) to expose the red side of the lever for the adjustment position. On some printers, only the numeral 0 appears in red when the paper feed release lever is flipped open.
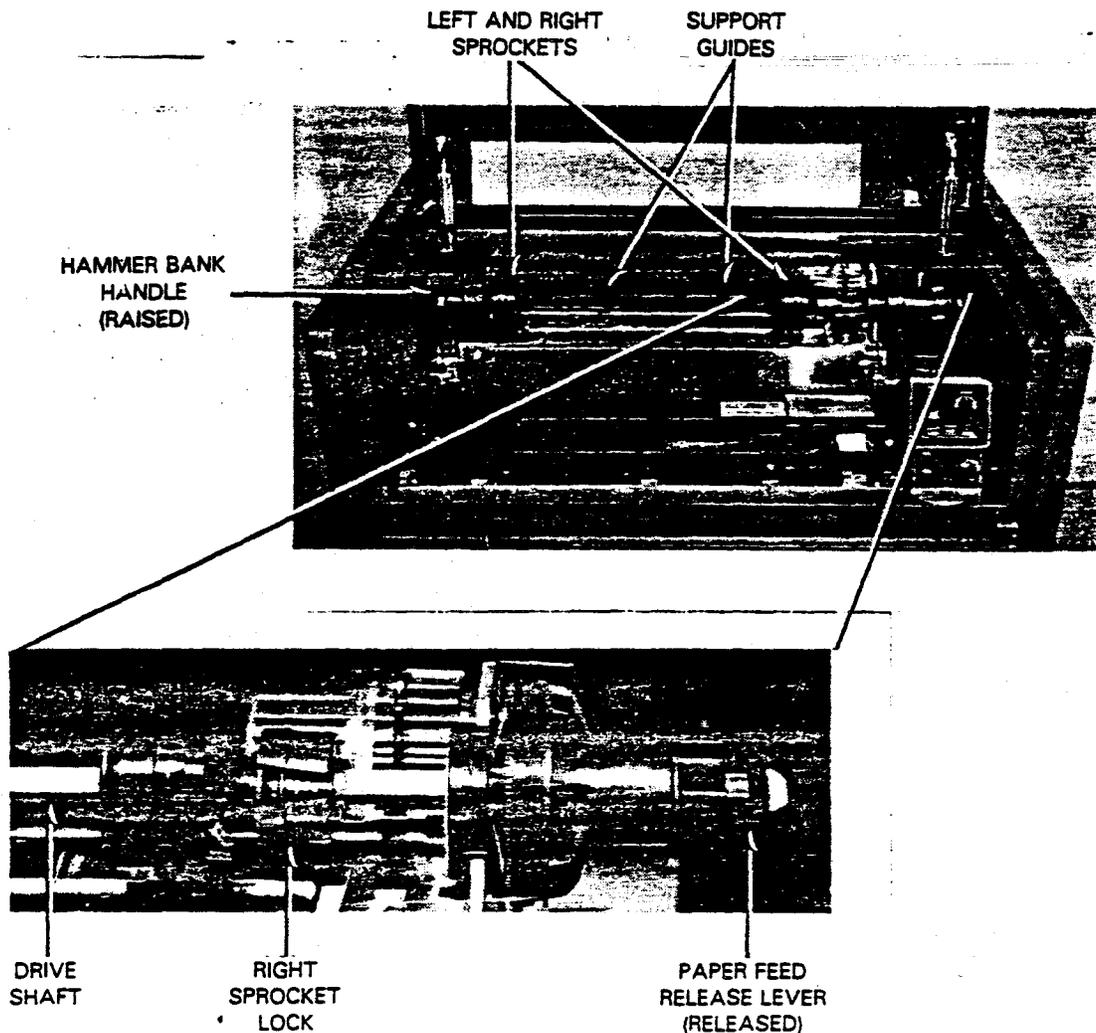
Figure 4-3. Preparing the Printer to Accept Forms

7.   Check that the hammer bank handle is raised to allow space between the hammer bank and print band.

8.   Squeeze the sprocket locks on the left and right sprockets to slide the sprockets along the square drive shaft to accommodate the form width.

9.   Center the two support guides on the square drive shaft so they are spaced equally between the left and right sprockets.

10. Swing both sprocket covers (Figure 4—4) open.
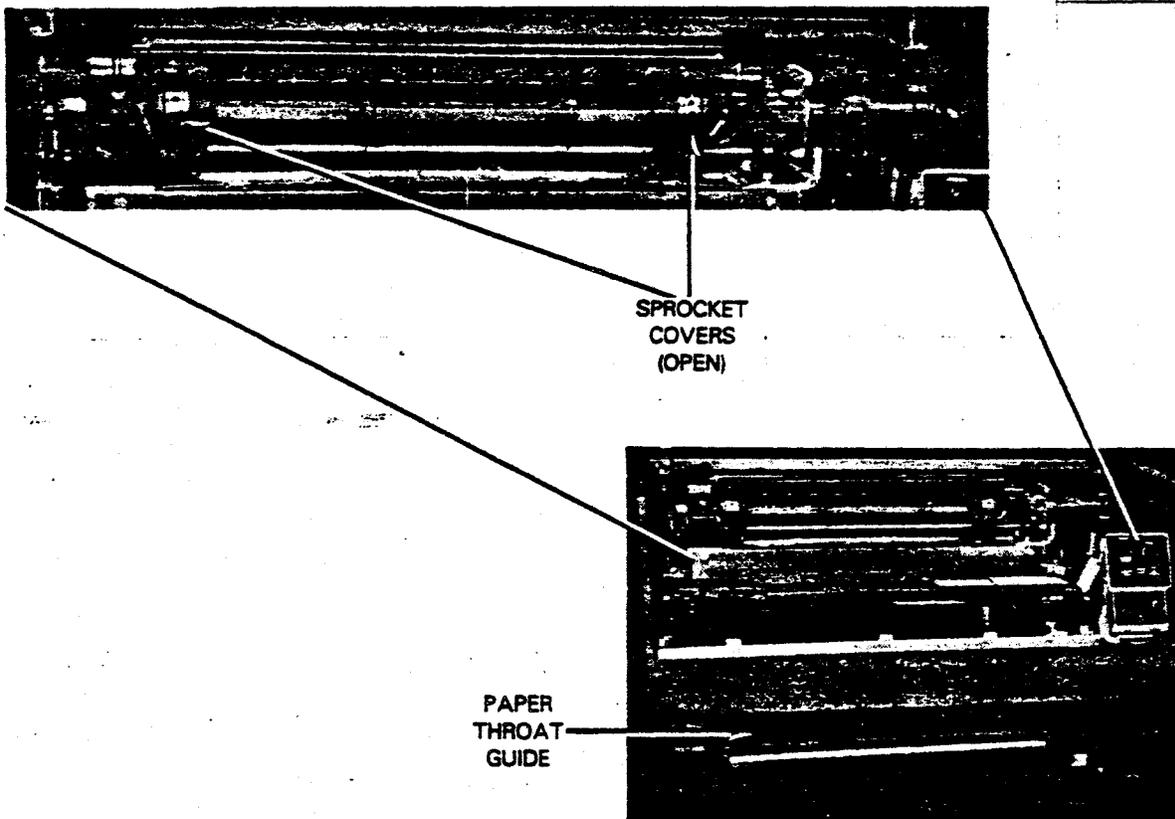
Figure 4—4. Opening the Paper Path

11. Reach under the print mechanism via the front door opening, and swing the paper throat guide down.

12. Prepare the pull-tab cardboard forms container (Figure 4–5) for efficient paper feed as follows:

NOTE:

If container is not equipped with pull-tab, perform step 13 instead.

a. Pull pull-tab around container until top is separated.

b. Remove and discard top.
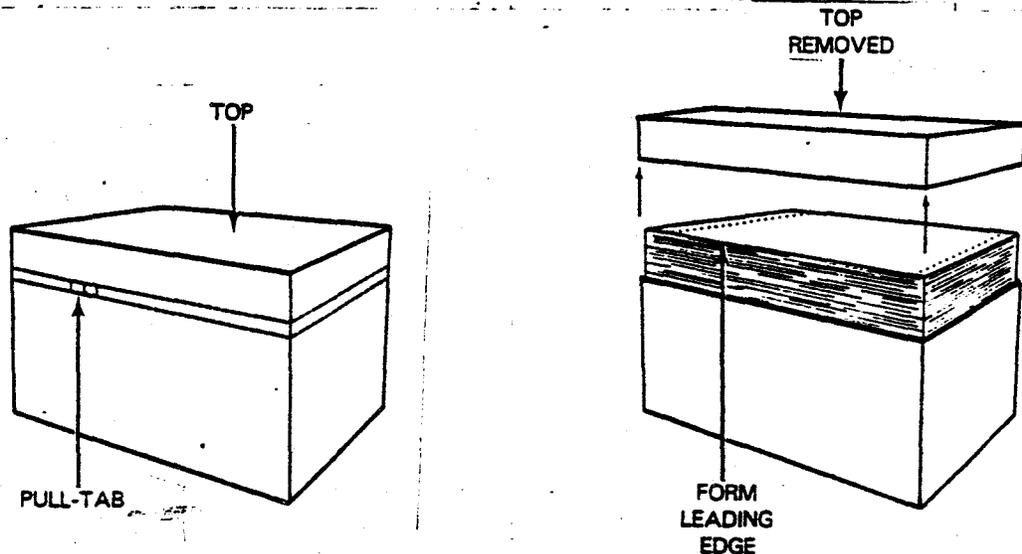
Figure 4–5. Forms Container Prepared for Printer Operation (Pull-tab Box)

13. Prepare the standard cardboard forms container (Figure 4–6) for efficient paper feed as follows:

NOTE:

Insert a cardboard spacer between the forms and the container to avoid cutting the forms.

a. Cut off the container top approximately 2 inches (5.08 cm) from the top edge. Insert the side spacers.

b. Locate the first form leading edge and cut the container diagonally on both sides.

c. Insert a cardboard spacer in the front of the carton. Cut across the container front to meet the side diagonal cuts. Remove the front spacer.
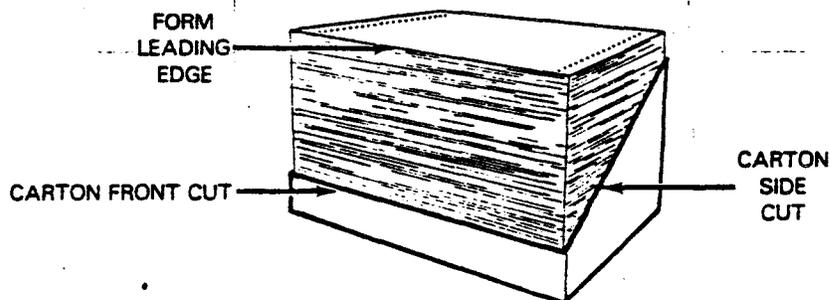
Figure 4–6. Forms Container Prepared for Printer Operation (Standard Box)

14. Place the container of forms into the forms compartment (Figure 4—7) so that the printing surface of
the form faces front when it feeds into the print mechanism.

FORM TORN AT
SPROCKET HOLE

RIGHT SPROCKET   PAPER EXIT
COVER   SUPPORT
(CLOSED)

LEFT
SPROCKET
COVER
(CLOSED)

FORMS
ALIGNMENT
SCALE

PAPER THROAT
GUIDE
(CLOSED)

FORMS
COMPARTMENT

Figure 4—7. Loading Forms

15. Slide the paper leading edge up through the open throat, over the sprockets and partly through the
paper exit support.

16. Align the form sprocket holes over the right sprocket pins and close the right sprocket cover.

17. Squeeze the right sprocket lock to slide the sprocket and form to fit the left sprocket holes over the left sprocket pins, then close the left sprocket cover.

CAUTION

The left sprocket holes locked on the left sprocket must match with the holes locked on the right sprocket. If the holes are not matched, the forms will skew.

18. Simultaneously squeeze both sprocket locks to move the form left or right and align the first column to be printed on the form with the desired position on the forms alignment scale. Tension the forms horizontally before releasing the sprocket locks.

CAUTION

Sprocket overtension causes the sprocket holes to tear.

19. Move the forms container slightly in either direction to align it with the paper feeding position of the print mechanism; then close the paper throat guide and front cabinet door.

NOTE:

Selection of the 6 or 8 LPI top-of-form index scale for paper alignment is determined by desired vertical line density. Line density is selected with the LINES 6/8 switch on the operator control panel. Paper adjustment for either density is described in step 20.

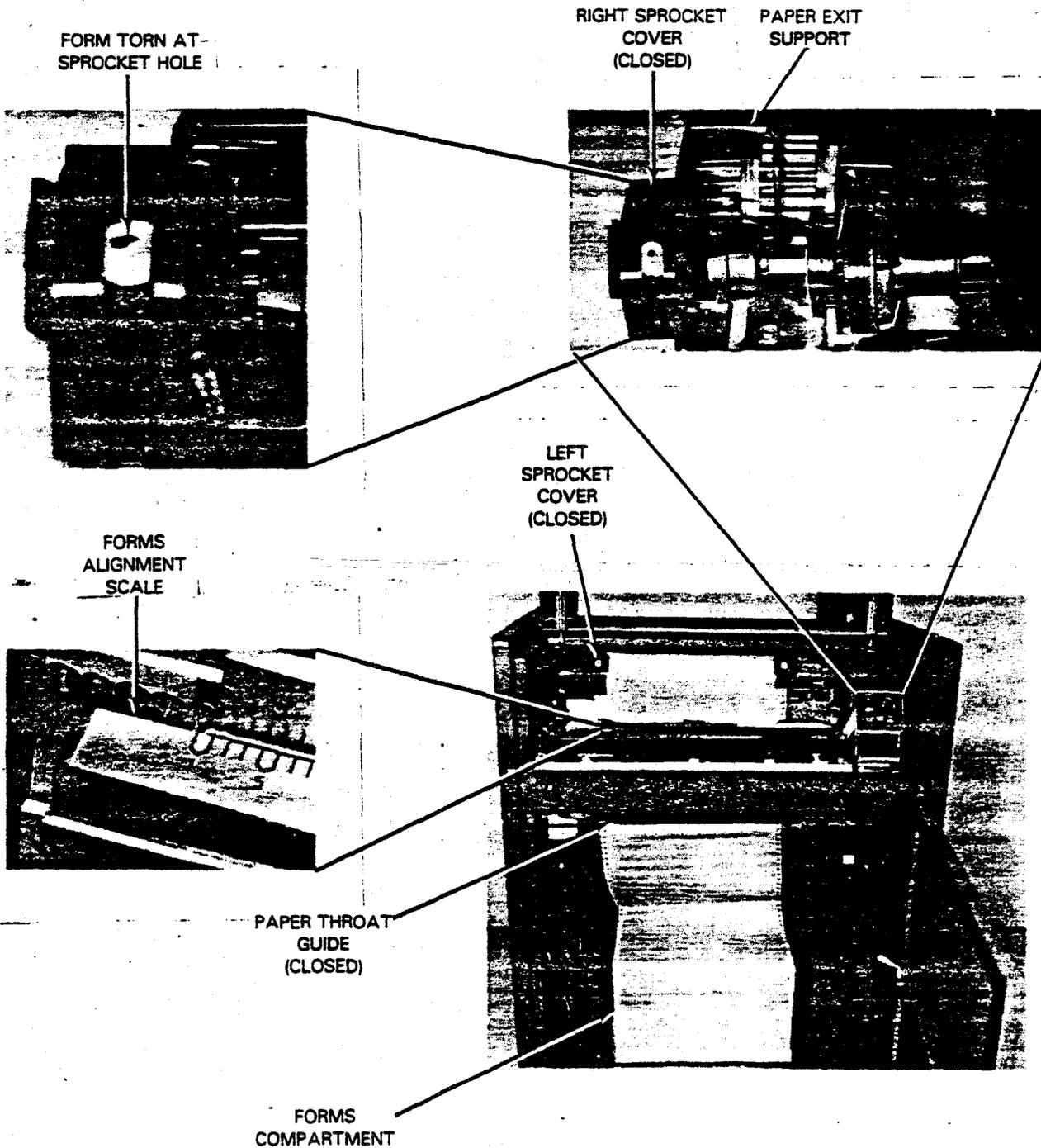20. Turn the paper adjust knob (Figure 4—8) to move the paper vertically, and align the form perforation with the applicable top-of-form index scale. For example, to set the form perforation at 6 on the 8 LPI scale, the first printed line will be 6 lines below the paper perforation. The top-of-form index scale for 8 LPI is to the right of the form, and the scale for 6 LPI is to the left of the form.
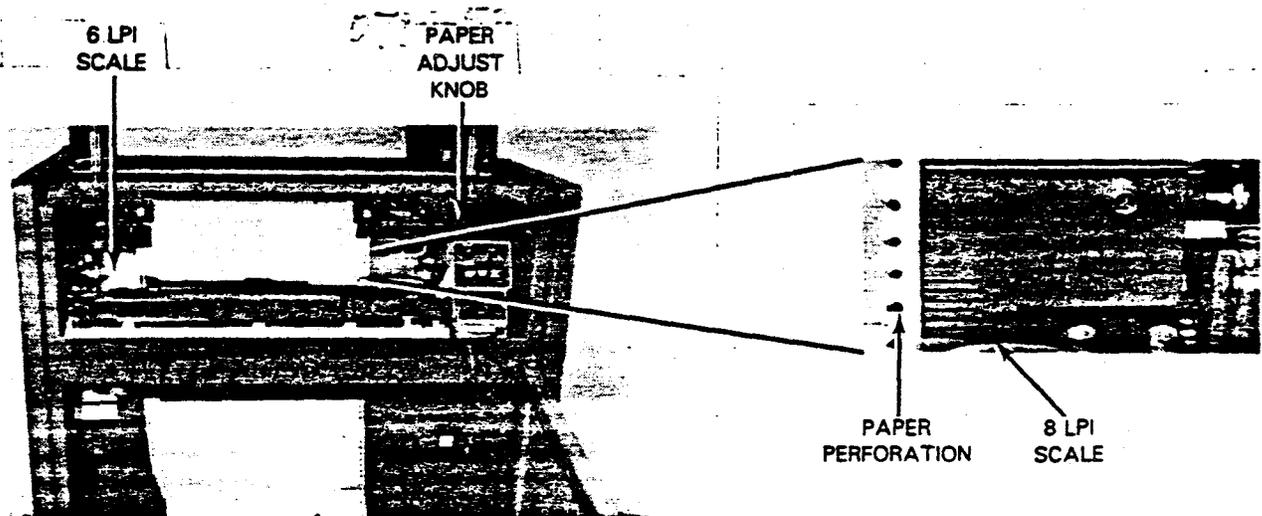
Figure 4—8. Vertical Spacing and Density Adjustments

21.　Lower the hammer bank latch handle (Figure 4-9) and be certain it is locked in position.

HAMMER
BANK LATCH
HANDLE
(LOWERED)

PAPER
FEED RELEASE
LEVER
(LOCKED)

FORMS LENGTH
SELECT SWITCH
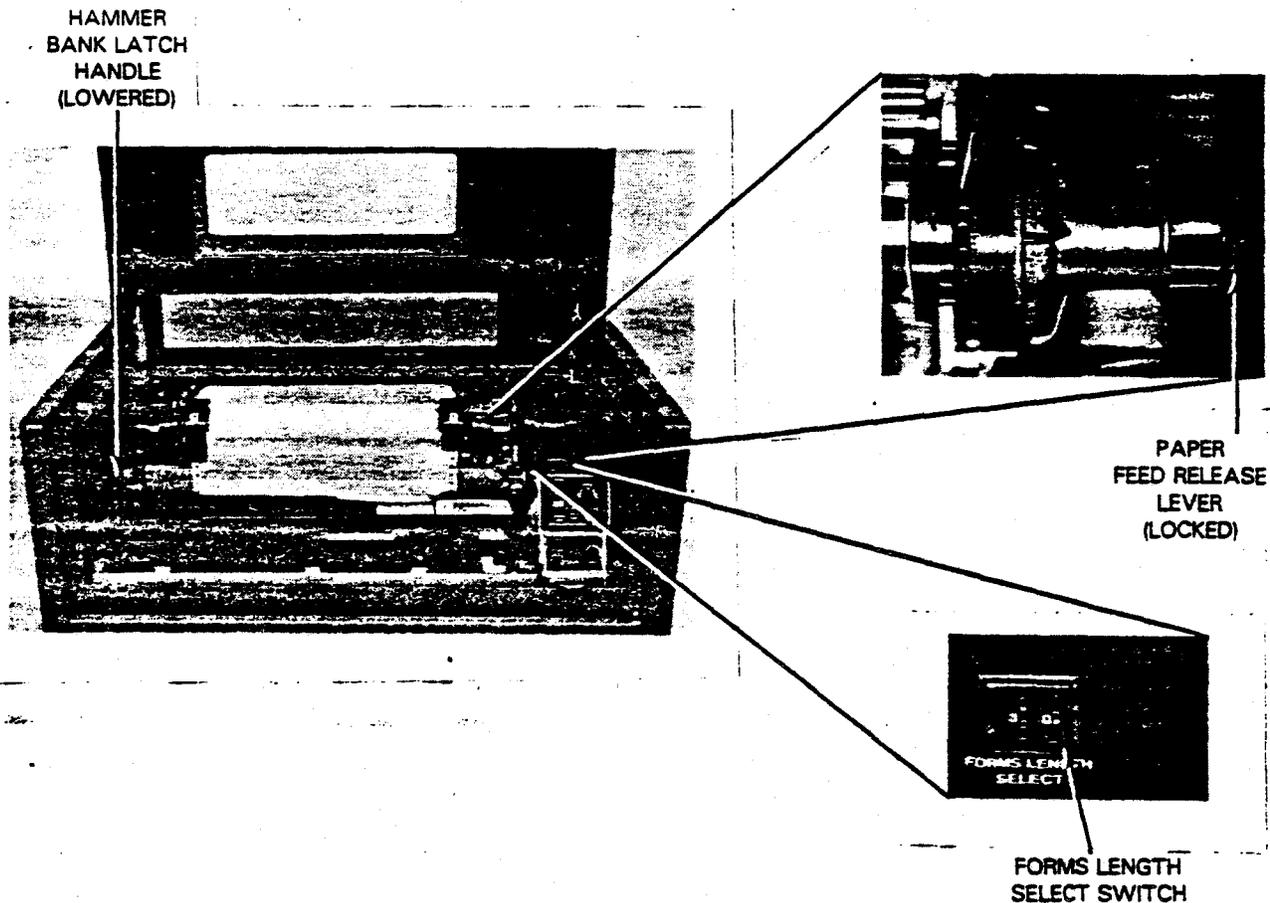
Figure 4-9. Completing the Forms Installation

22.　Close the paper feed release lever to the lock position, which conceals the red side (or red numeral 0) of the lever. On some printers the numeral 1 becomes visible in locked position.

23.　Set the FORMS LENGTH SELECT switch to accommodate the length of the form. (This switch is not present on all printers.)

24. Press the ALARM/CLEAR switch/indicator (Figure 4-10) to extinguish the indicator.
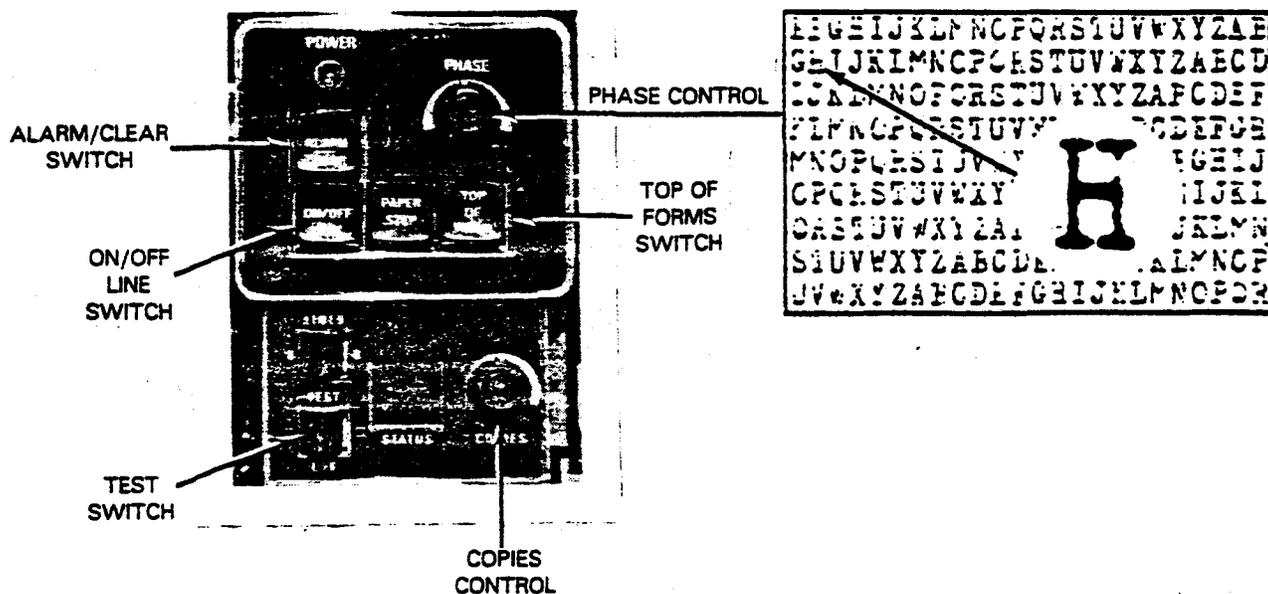
Figure 4-10. Operator Adjustments

25. Set the TEST switch to the (left) position.

26. Press the ON/OFF LINE switch/indicator to print several lines; then press the switch again to stop printing.

27. Examine the printing registration of the entire printed area. Adjust the PHASE control as required to correct for nonprinting of character sides. Clockwise rotation of the PHASE control improves the right side of printed characters, and counterclockwise improves the left side. Set the control to balance both sides.

28. Set the COPIES control as low as possible for good print quality on all sheets of multiple-copy forms. If a single-part form is to be printed, set the COPIES control fully counterclockwise. Lower settings of the COPIES control promotes increased life of the inked ribbon, the print band, and the print hammers.

29. Set the TEST switch to OFF (center) position.

     NOTE:

     Set the TEST switch to OFF (center) only when the ON/OFF LINE indicator is extinguished (test pattern not printing). Moving the TEST switch to OFF (center) while the test patter is printing will increase the sound level to undersirable levels.

30. Repeat steps 5 through 7 and 20 through 22, as needed, to achieve optimum print quality.

31. Press the TOP OF FORMS switch so printing will begin on new form.

32. Close the front cabinet door and front top cover.

33. Open the rear cabinet door (Figure 4–11) and set the forms stacker guide to accommodate even stacking for the form size to be printed. Then, close the cabinet door.

34. Ensure that all cabinet doors and covers remain closed in order to reduce noise level when the printer operates.

35. Press the ON/OFF LINE switch/indicator to light the indicator and receive data from the host system.
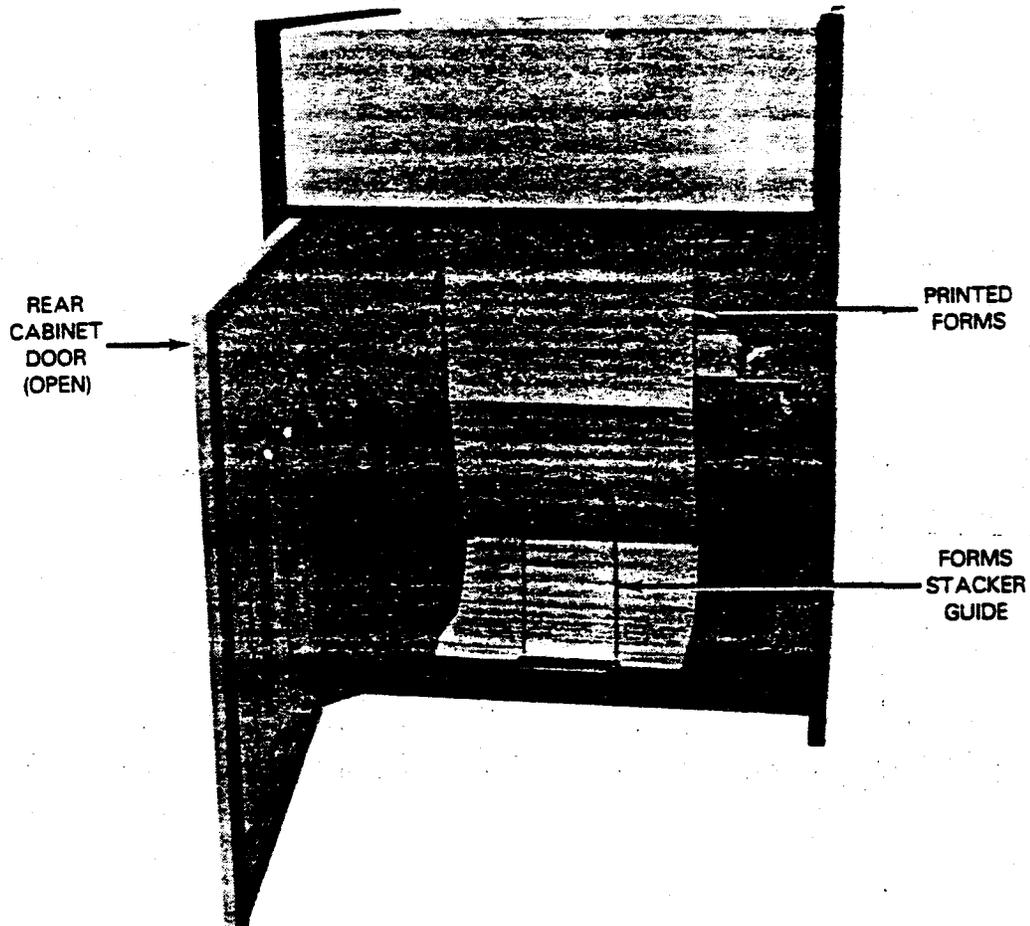

REAR
CABINET
DOOR
(OPEN)

PRINTED
FORMS

FORMS
STACKER
GUIDE

Figure 4–11. Putting the 0789 Printer Online

4.6. FORMS UNLOADING

Forms are unloaded after a program run is completed or when another set of forms is to be used. Unload the forms as follows:

1. Press the TOP OF FORM switch or the PAPER STEP switch on the operator control panel until the last printed form is visible at the rear of the printer.

2. Raise the printer cover and open the cabinet front door.

3. Set the POWER ON/OFF switch to the OFF position.

4. Tear or cut the forms at the perforations following the last printed form and allow the last printed form to go on to the paper tray.

5. Remove the forms by lifting the printed forms out of the stacker area.

6. Lift the hammer bank latch lever to move the hammer bank back, releasing forms at print station throat.

7. Open the front door of the forms compartment.

8. Open the paper entrance door.

9. Open the upper left and right tractor sprocket pin covers.

10. Slide the forms from the wire forms exit guide by sliding the forms outward.

11. Lift the forms free of the sprocket pins.

12. Lower the forms through the forms gap between the horizontal scale and the column scale at the print station.

13. The forms should automatically fall into their proper position in the forms container.

14. Remove the container and the remaining forms.

15. Close the front door of the forms compartment.

16. Close the upper left and right tractor sprocket pin covers.

17. Return the hammer bank latch lever to its locked position.

18. Lower the printer cover.

19. Close the rear doors.

4.7. INKED RIBBON REPLACEMENT

The inked ribbon should be replaced when printing appears light or faded, or the inked ribbon appears worn and frayed. It is also recommended that the print band be cleaned each time a ribbon is changed.

1. Raise the printer cover.

2. Set the POWER ON/OFF switch (1/0) to the OFF position.

3. Lift the hammer bank latch lever to move the hammer bank back.

4. Release the rectangular inked ribbon cartridge (Figure 4-12a) from the locating pins by sliding it to the right and lifting.

5. Release the capstan/pinch wheel assembly pressure from the inked ribbon by rotating the pivot arm away from the capstan and the first ribbon guide. See Figure 4-12b.

6. Remove the inked ribbon cartridge from the printer and place it in a plastic bag to prevent ink smudges when discarded.

INKED RIBBON
CARTRIDGE
REMOVAL

INKED RIBBON
CARTRIDGE
LOCATING
PINS

SUPPORT
PLATFORM

a. Cartridge removal
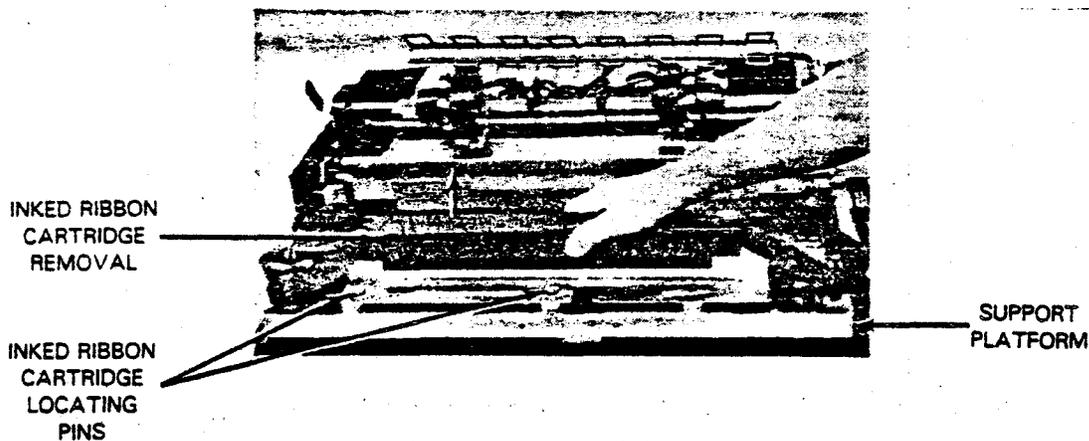
CAPSTAN/PINCH
WHEEL ASSEMBLY
RELEASED
(PIVOT ARM)
PINCH WHEEL
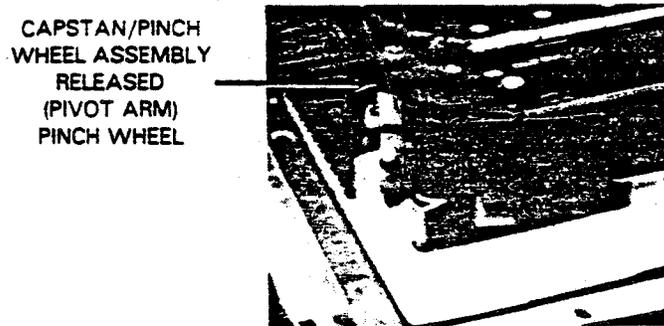
b. Ribbon drive release

Figure 4-12. Inked Ribbon Removal

7.   Obtain a new inked ribbon cartridge and remove it from the shipping container.

8.   Open the pinch roller arm assembly (Figure 4—13a) by moving the rollers toward the front of the printer. Note the two ribbon cartridge locating pins on which the ribbon cartridge is to be mounted.

9.   Place the ribbon cartridge (Figure 4—13b) over the two locating pins, with the ribbon loop lying on the print band cover.

10. Insert the ribbon between the pinch roller and ribbon drive roller, then around the first ribbon guide.

11. While pulling the ribbon lightly at the first ribbon guide to remove slack, slide the ribbon cartridge firmly to the left until it snaps in place (Figure 4—13c).

12. Close the pinch roller arm assembly.

13. Place the ribbon around the second ribbon guide, then insert it between the ribbon mask and print band.

14. Pass the ribbon around the third and fourth ribbon guides.

     NOTE:

     Refer to Figure 4—13d for the entire ribbon path. Ensure that there are no folds or twists in the entire exposed section of ribbon.

15. Open the print band cover and turn one of the pulleys counterclockwise (Figure 4—14b) to remove a ribbon slack. Then close the print band cover.
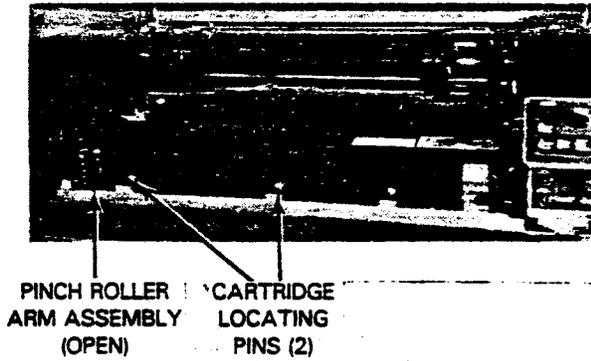
a. Preparing to install the ribbon
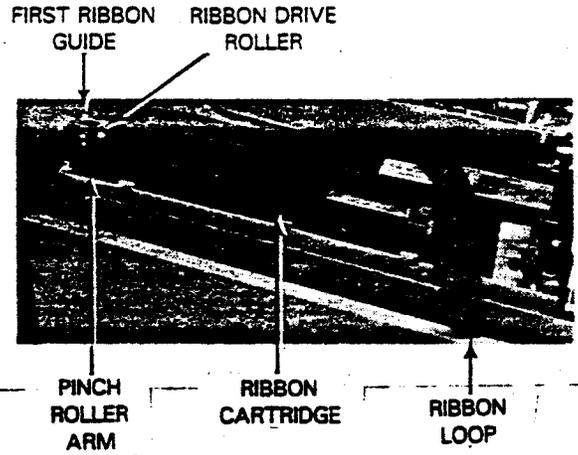
b. Threading ribbon around the first ribbon guide
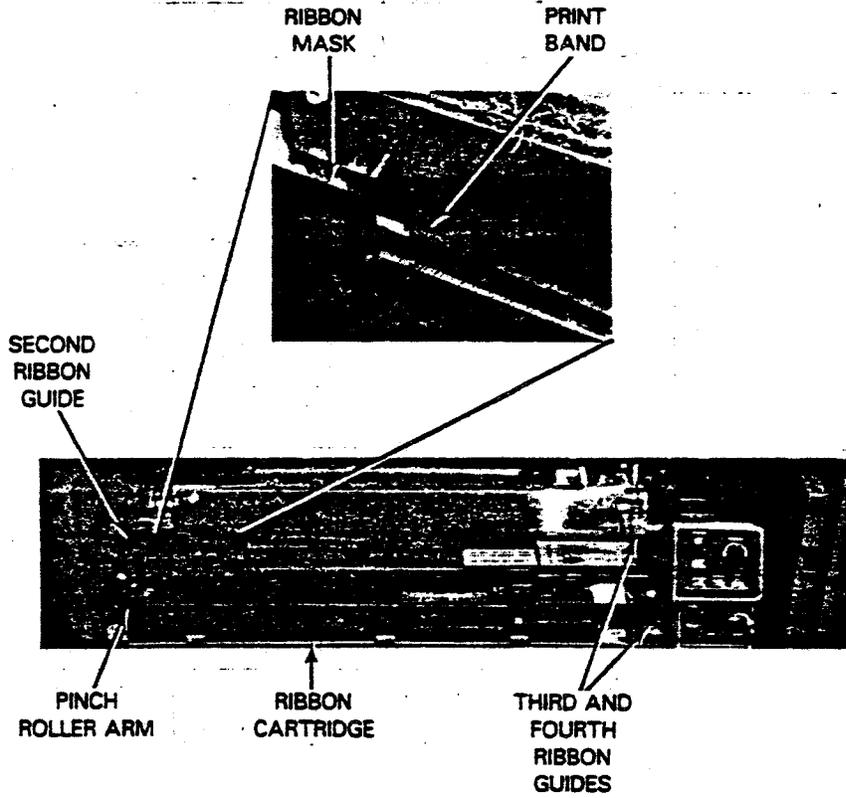
c. Threading ribbon around the print band
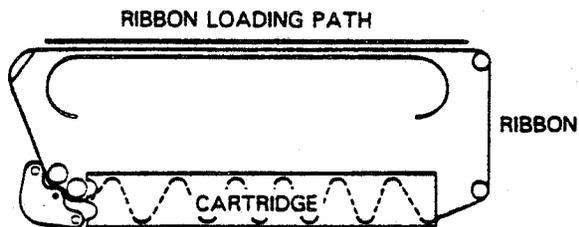
d. Ribbon threading diagram

Figure 4-13. Ribbon Installation on 0789 Printer

4.8. PRINT BAND REMOVAL AND REPLACEMENT

To remove and replace a print band on the 0789 printer, proceed as follows:

1.   Open the printer door.

2.   Set the POWER ON(1)/OFF(0) switch to OFF(0).

3.   Raise the top cover.

4.   Raise the hammer bank latch handle (Figure 4-14a) to move the hammer bank away from the print bank path.

5.   Raise the print band cover to expose pulleys.

6.   Firmly move the band release lever to the rear (toward the hammer bank) to release the right band pulley.

CAUTION

Do not bend print band to a radius less than that of the band pulleys when removing or during storage.

7.   While holding the band with the left hand, carefully lift the band from the right band pulley.

8.   Squeeze the band together at the center, carefully lift it off the left band pulley, and remove it from the printer.

9.   Remove a new print band from its container and place the old band in the same container.

10. Place the print band (Figure 4-14b) over the pulleys with the print characters facing out and upright (ripple edge of print band on top). Then carefully insert the print band around the left pulley between the ribbon mask and the forms alignment scale.

11. While holding the band in position around the left pulley, slide it over the right pulley, between the pulley and ribbon mask, and between the pulley and band sensor. The ribbon mask extends from the left to the right pulleys. Be sure the print band is inserted between the entire ribbon mask and both pulleys.

12. Move the band down until it rests on the right edge guide bearing.

13. Move the band release lever (Figure 4-14a) away from the hammer bank to engage the band pulleys.

14. Rotate one of the pulleys counterclockwise until the print band is seated on the left edge and right edge guide bearings (Figure 4—14b).

15. Close the print band cover (Figure 4—14a), and close the printer cover.

   NOTES:

   1. *If a new inked ribbon is to be installed, allow the hammer bank latch handle to remain raised.*

   2. *If a print band is replaced that is not associated with a previously installed PROM, a status display of 05 appears on the operator control panel and no printing will take place.*

   3. *Print bands not in use are stored in their respective containers and kept in the band storage area located in the forms compartment.*

a. Printer prepared to receive print band
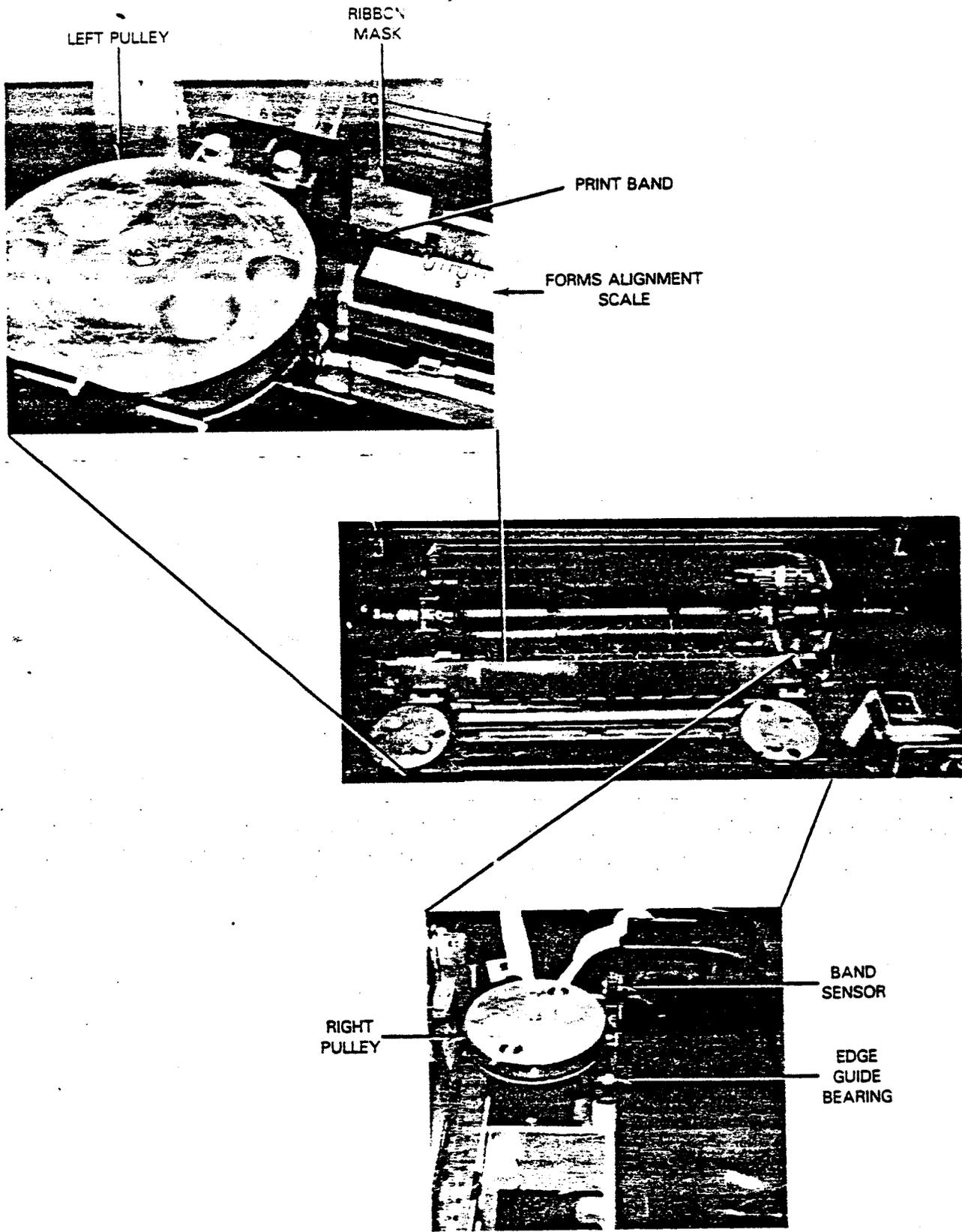
Figure 4—14. Print Band Installation (Part 1 of 2)

LEFT PULLEY

RIBBON MASK

PRINT BAND

FORMS ALIGNMENT SCALE

BAND SENSOR

RIGHT PULLEY

EDGE GUIDE BEARING

b Print band locations

Figure 4-14. Print Band Installation (Part 2 of 2)

4.9. RECOVERY PROCEDURES

The printer provides a 2-digit diagnostic display on the operator control panel to quickly identify the nature of a fault, determine if the fault can be corrected locally, or whether technical assistance is required. When technical assistance is required, the diagnostic display code enables the customer engineer to isolate the problem area and initiate corrective action. The diagnostic display code, the associated problem, and the recovery procedures are listed and defined in Table 4-1.

Table 4-1. Operator Recovery Procedures (Part 1 of 4)

Display Code	Problem	Probable Cause	Recovery Procedure	Cleared by
01	Paper supply low	Paper forms required	1. Unload paper. 2. Reload new forms supply. 3. Reenter program at proper point.	Press ALARM/CLEAR switch.
02	Paper motion fault	Paper forms not moving or moving too slowly through print station	1. Check that tractor sprocket pins are engaged in forms sprocket holes. 2. Check that paper feed release lever is engaged. 3. Check for alignment, binding or tears along forms path. 4. If none of the above, contact Sperry customer engineer.	Press ALARM/CLEAR switch.
03	Band cover open or band tension fault	Print band cover open; band tension fault	Close print band cover. Check and lock print band tension lever.	Press ALARM/CLEAR switch.
04	Hammer bank open	Hammer bank latch lever in release (up) position	Return hammer bank latch lever to down position.	Correct fault.
05	Undefined band or band image PROM not present	Wrong print band for PROMs	Install correct print band.	Press ALARM CLEAR switch.
06	Inked ribbon motion fault	Inked ribbon jammed	Remove and replace inked ribbon cartridge.	Press ALARM/CLEAR switch.
08	Undefined form length selected	FORMS LENGTH SELECT switch improperly set	Check that FORMS LENGTH and LINES 6/8 switches are properly set. If fault persists, contact Sperry customer engineer.	Press ALARM/CLEAR switch.
10	VFU memory not loaded	No vertical form data in VFU memory.	Reload vertical format data from system. If fault persists, contact Sperry customer engineer.	PRESS ALARM/CLEAR switch.

Table 4–1. Operator Recovery Procedures (Part 2 of 4)

Display Code	Problem	Probable Cause	Recovery Procedure	Cleared by
16	Single step mode	NA	Press ALARM/CLEAR switch. If fault persists, contact Sperry customer engineer.	–
17	Loss of synchronization in print	Extraneous band pulse	Shut down and then power up.	Press ALARM/ CLEAR switch.
20	No data comparison, data unprintable	Data error	Press ALARM/CLEAR switch. If fault persists, contact Sperry customer engineer.	–
21	Print inhibit	NA	Shut down and then power up. If fault persists, contact Sperry customer engineer.	–
22	Interlock cable error, cables not	Cables not connected	1. Shut down 2. Check that all doors are closed. 3. Check that interface cables are properly connected 4. Power up 5. If fault persists, contact Sperry customer engineer.	–
23	I/O parity error	Illegal character received from system	Press ALARM/CLEAR switch. If fault persists, contact Sperry customer engineer.	–
24	Eight consecutive overprints (carriage returns)	Data error	Programming error. Eight consecutive print commands were issued without a line feed command. Press ALARM/CLEAR switch. If fault persists, contact Sperry customer engineer.	–
25	Forms code not recognized	Illegal control character received from system	Press ALARM/CLEAR switch. If fault persists, contact Sperry customer engineer.	–
26	DAVFU stop code error	VFU format load error	Reload vertical format data. If fault persists, contact Sperry customer engineer.	Press ALARM/ CLEAR switch.
27	DAVFU data transfer >143	More than 143 vertical data format words sent by system	Reload with correct vertical format data. If fault persists, contact Sperry customer engineer.	Press ALARM/ CLEAR switch.
28	VFU checksum error	Miscompare of vertical format checksum words	Reload vertical format data. If fault persists, contact Sperry customer engineer.	Press ALARM/ CLEAR switch.

Table 4—1. Operator Recovery Procedures (Part 3 of 4)

Display Code	Problem	Probable Cause	Recovery Procedure	Cleared by
29	I/O parity error on DAVFU load	Data error during load of vertical format data	Reload vertical format data. If fault persists, contact Sperry customer engineer	Press ALARM/ CLEAR switch.
30	VFU memory check error	NA	Shut down and then power up. If fault persists, contact Sperry customer engineer.	Press ALARM/ CLEAR switch.
33	Data RAM integrity error	NA	Shut down and then power up. If fault persists, contact Sperry customer engineer.	Press ALARM/ CLEAR switch.
34	Illegal RAM integrity error	NA	Shut down and then power up. If fault persists, contact Sperry customer engineer.	Press ALARM/ CLEAR switch.
35	Band image ROM parity	NA	Press ALARM/CLEAR switch. If fault persists, contact Sperry customer engineer.	–
36	Foldover error. >15 no-fold characters in band PROM within the fold region	NA	Shut down and then power up. If fault persists, contact Sperry customer engineer.	Press ALARM/ CLEAR switch.
37	Data RAM parity error	NA	Press ALARM/CLEAR switch. If fault persists, contact Sperry customer engineer.	–
40	Band speed fault	NA	Shut down and then power up. If fault persists, contact Sperry customer engineer.	–
41	Paper system fault (feed motor or clamp)	NA	Shut down and then power up. If fault persists, contact Sperry customer engineer.	–
42 and 43	Hammer system fault	NA	Shut down and then power up. If fault persists, contact Sperry customer engineer.	–
44	12V fault	NA	Shut down and then power up. If fault persists, contact Sperry customer engineer.	–
45	–9V fault	NA	Shut down and then power up. If fault persists, contact Sperry customer engineer.	–
46	Control voltage fault	NA	Shut down and then power up. If fault persists, contact Sperry customer engineer.	–

Table 4—1. Operator Recovery Procedures (Part 4 of 4)

Display Code	Problem	Probable Cause	Recovery Procedure	Cleared by
47	+38 V fault	NA	Shut down and then power up. If fault persists, contact Sperry customer engineer.	—
48	Transducer fault (band transducer)	NA	Shut down and then power up. If fault persists, contact Sperry customer engineer.	—
49	Band current fault	NA	Shut down and then power up.	—
50	System status fault	NA	Shut down and then power up.	—
66	Self-test with print inhibit	NA	Shut down and then power up. If fault persists, contact Sperry customer engineer.	—
67	Self-test	Printer in self-test mode	Indicates printer is in self-test mode.	Set TEST switch to center (OFF) position.
76	Online — print inhibit	NA	Shut down and then power up. If fault persists, contact Sperry customer engineer.	—
77	Normal online	Printer operating online property	Indicates normal online operation.	
88	Normal offline	Printer operating offline property	Indicates normal offline operation.	
P	Power fault	Power supply fault	Printer automatically powers down. Shut down and then power up. If fault persists, contact Sperry customer engineer.	—
H	Over temperature	Internal overheating	Printer automatically powers down. Shut down and then power up. If fault persists, contact Sperry customer engineer.	—
C	Clock	Timing clock pulse error	Printer automatically powers down. Shut down, wait five minutes, power up. If fault persists, contact Sperry customer engineer.	—
HP	Microcode parity error	NA	Shut down and then power up. If fault persists, contact Sperry customer engineer.	Press ALARM/ CLEAR switch.

LEGEND:

NA   Not applicable

5. Operator-Performed Maintenance

5.1. MAINTENANCE LIMITATIONS

Maintenance performed by the operator on the 0789 printer is limited to cleaning the print band and keeping the printing area free of lint from the paper forms and the inked ribbon.

NOTE:

The recommended cleaning solution for all printer subassemblies is 91% isopropyl alcohol.

Do not use trichloroethylene, methylethyl-ketone, or acetone.

WARNING

Isopropyl alcohol is a combustible liquid and must be kept away from direct heat and open flame.

5.2. CLEANING PRINT BAND

1. Remove the inked ribbon (see 4.6).

2. Remove the character print band (see 4.7).

3. Place the print band into a shallow pan containing the cleaning solution.

4. Using a stiff-bristle brush, clean both sides of the character band.

5. Remove the band from shallow pan and allow it to drip dry.

6. Moisten a soft cloth with cleaning solution and wipe off both band pulleys, the platen (area facing hammers), and along the path the character band travels.

7. Replace the character print band (see 4.7).

8. Replace the inked ribbon (see 4.6).

5.3. CLEANING PRINTING AREA

The printing assembly, print head area, and paper well must be cleaned each time the ribbon is changed. The printing area should be cleaned as follows:

1.   Remove forms (see 4.5).

2.   Remove the inked ribbon (see 4.6).

3.   Remove the print band (see 4.7).

4.   Remove the accumulated threading ends or pieces of ribbon from around the print band pulley wheel and inked ribbon path. Use a vacuum cleaner to remove small particles of dust and lint from beneath the pulley wheels, print throat, and paper path area.

5.   Clean the forms compartment below the printer.

6.   Clean the forms stacker area.

7.   Moisten a cloth with cleaning solution and clean the ribbon drive rollers, ribbon guide posts, print band pulleys, the platen (area facing hammers), and along the path the character band travels.

8.   Replace the character print band (see 4.7).

9.   Replace the inked ribbon (see 4.6).

10. Replace the forms (see 4.4).

NOTE:

After cleaning the printing area, adjust print density and character phasing.

Index

TITLE PAGE TEXT