

44689053

 **CONTROL DATA**

**LINEWRITER 400/800
MODELS CT301-A/B AND CT302-B
WITH OEM PARALLEL INTERFACE**

**INSTALLATION AND CHECKOUT
FACTORY SWITCH SETTINGS
CHOOSING A LOCATION
INPUT POWER CONVERSIONS
INTERFACE SIGNALS**

SET-UP AND REFERENCE MANUAL

REVISION RECORD

| REVISION | DESCRIPTION |
|----------------|---|
| 01 JULY '83 | Pre-release of the Linewriter 400 Set-Up and Reference Manual. |
| A NOV., '83 | Release of the Linewriter 400 Set-Up and Reference Manual. |
| B FEB., '84 | Added 800 LPM Information and Interface Signals |
| C JULY '84 | Restructured entire manual. Revised Installation and Checkout section. Added Quiet Cabinet information. |
| D JAN., '85 | Added clarification to installing ROM's into 1PC1, and incorporated ECO PH20308. |
| E APRIL '85 | Added Backplane Switch Settings and ECO PH20598. |

PUBLICATION NO.

44689053

Revision Procedure:

The revision record page is revised for each revision package to reflect the revision sequence: (Pre-Release) Rev. 01, 02, etc; (Release) Rev. A, Rev. B, Rev. C, etc. The revision record page also provides a brief description of each change. A manual update revision package will be available for manuals after the Release revision of the manual. Each page revised in an update revision package will have the month and year printed in the lower right hand corner. This same date would appear in the revision column above, just below the revision identification. An instruction sheet cover is with each revision package, explaining page removal and insertion and reason for the change. The instruction sheets for revision packages are then to be placed at the back of the manuals as a record of the change.

IDENTIFICATION NO.

MANUAL TO EQUIPMENT LEVEL CORRELATION

This manual reflects the equipment configurations listed below.

| EQUIPMENT TYPE | SERIES | TOP LEVEL ASSEMBLY | COMMENTS |
|--------------------|--------------|----------------------|---|
| CT301-A CT301-B | 1-12 4-12 | 59829800 59829801 | No I/O Connector D Type I/O Connector (Short Line) |
| CT302-B | 1-8 | 59829851 | D Type I/O Connector (Short Line) |

PREFACE

This manual contains switch setting information and installation and checkout instructions for the Linewriter printers. This manual will aid the user as it also contains reference material (such as power/frequency conversions) which may be desired at a later date.

The publications listed below are related publications for these printers.

| PUBLICATION | PUBLICATION NUMBER |
|---|--------------------|
| Set-Up and Reference Manual (With RS-232 Serial Interface) | 44689037 |
| Set-Up and Reference Manual (With Series 1 Interface) | 44689059 |
| Maintenance Manual | 44689032 |
| Technical Manual | 44689051 |
| Parts Identification Manual | 44689062 |

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 communication. It has been tested and found to comply with the limits for a Class A peripheral computing device pursuant to Subpart J of Part 15 of the 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.

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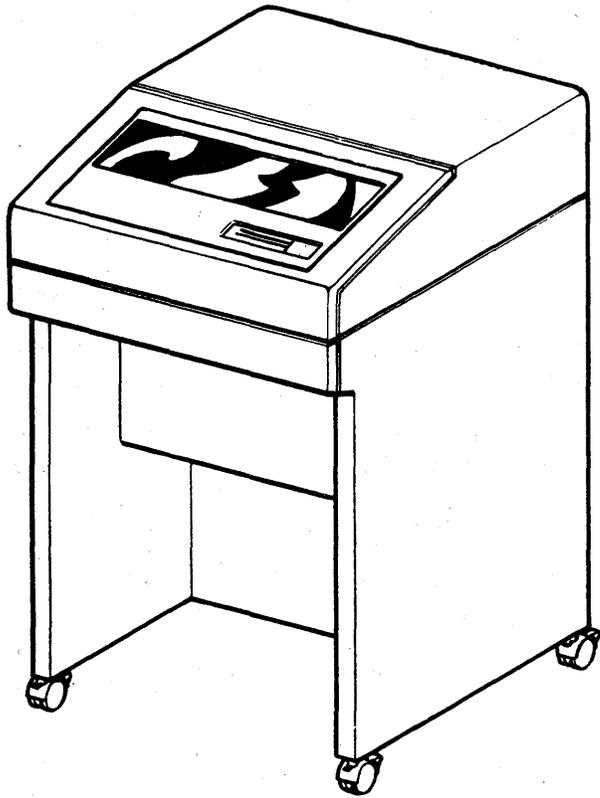
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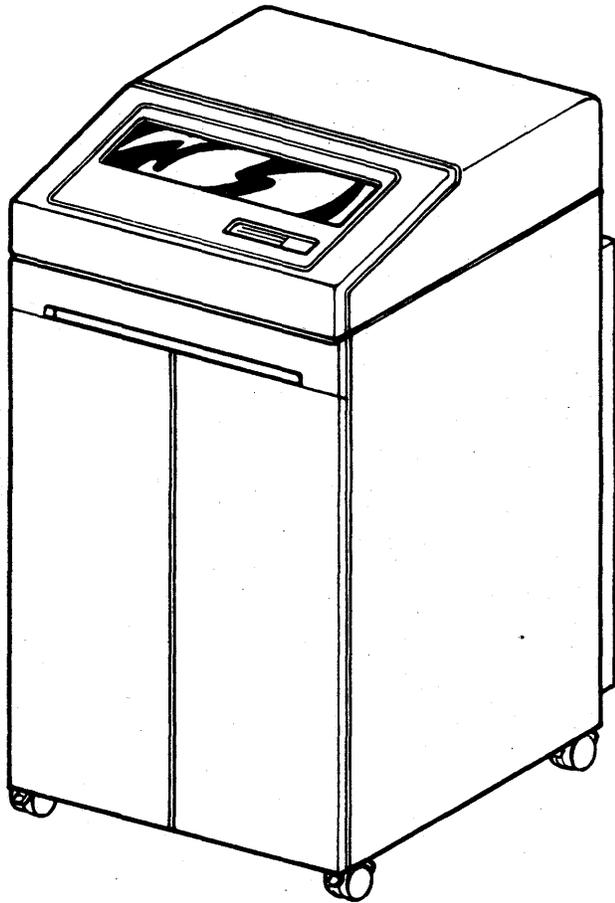
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WITHOUT DOORS



WITH DOORS

LINEWRITER 400/800

SECTION I INSTALLATION AND CHECKOUT

Before performing this procedure, study Figure 1-1 to identify and locate the major components necessary for proper Installation and Checkout.

Section II contains the factory switch settings of the printed circuit boards in locations 1PC1, 1PC2, 1BP1 and 6PC1 if applicable. These switch settings may be changed by the Customer Engineer. The illustrations will serve as a reference and will allow you to return the printer's switch settings to their original factory switch positions.

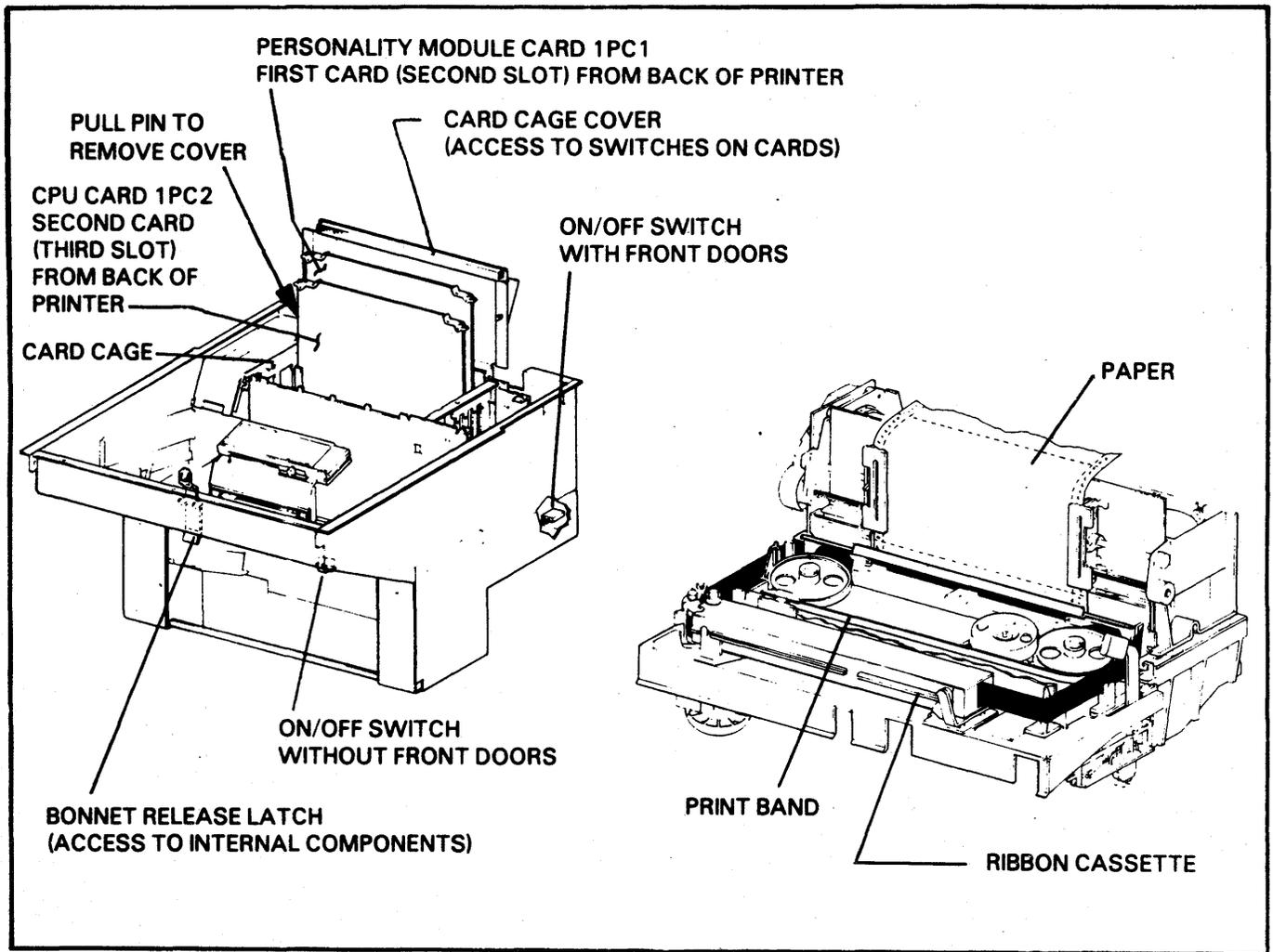


FIGURE 1-1. INSTALLATION AND CHECKOUT MAJOR COMPONENTS

Procedure

1. Roll the printer to an area where there is adequate environmental conditions, electrical power and clearance for service. Refer to Section III if necessary.
2. Plug the printer into its ac source and open the bonnet. The bonnet release latch is located in the center of the printer on the sloping surface directly beneath the bonnet window.
3. Install paper, ribbon cassette and print band per the Operator Instruction Cards beneath the bonnet as follows:
 - a. Paper Installation-Card 1, Step 2 only.
 - b. Ribbon Cassette Installation-Top Card.
 - c. Print Band Installation-Card 7 (Back).

If there are translator ROMs (small rectangular electronic components) in the print band's shipping container, open or remove the Card Cage Cover and install them in card 1PC1 at this time. See Figure 1-2. Refer to the document in the print band's shipping container for lower ROM bits and upper ROM bits part numbers. Install the upper bits ROM in the "High Order Bits" location, and the lower bits ROM in the "Low Order Bits" location. Be sure not to install the ROMs upside-down. The notches in the ROMs should line up with the notches in the ROM sockets.

NOTE

DIL NETWORKS, JUMPER WIRES AND INSTALLATION INSTRUCTIONS WHICH MAY COME WITH SOME KITS CAN BE DISCARDED. ONLY ROMs ARE USED ON LINEWRITER PRINTERS.

Once the ROM set is installed, translation is enabled by setting the appropriate switch ON that matches the character set of the print band being installed. These switches are located on 1PC1 also. See Section II. For example, if installing a 48 character print band, set that switch to the ON position, all other Select Translator ROM Switches should be OFF. If a band is installed which does not require translation but the translation ROMs are already installed on 1PC1, it is not necessary to remove the ROMs, just set the equivalent switch on 1PC1 to the OFF position.

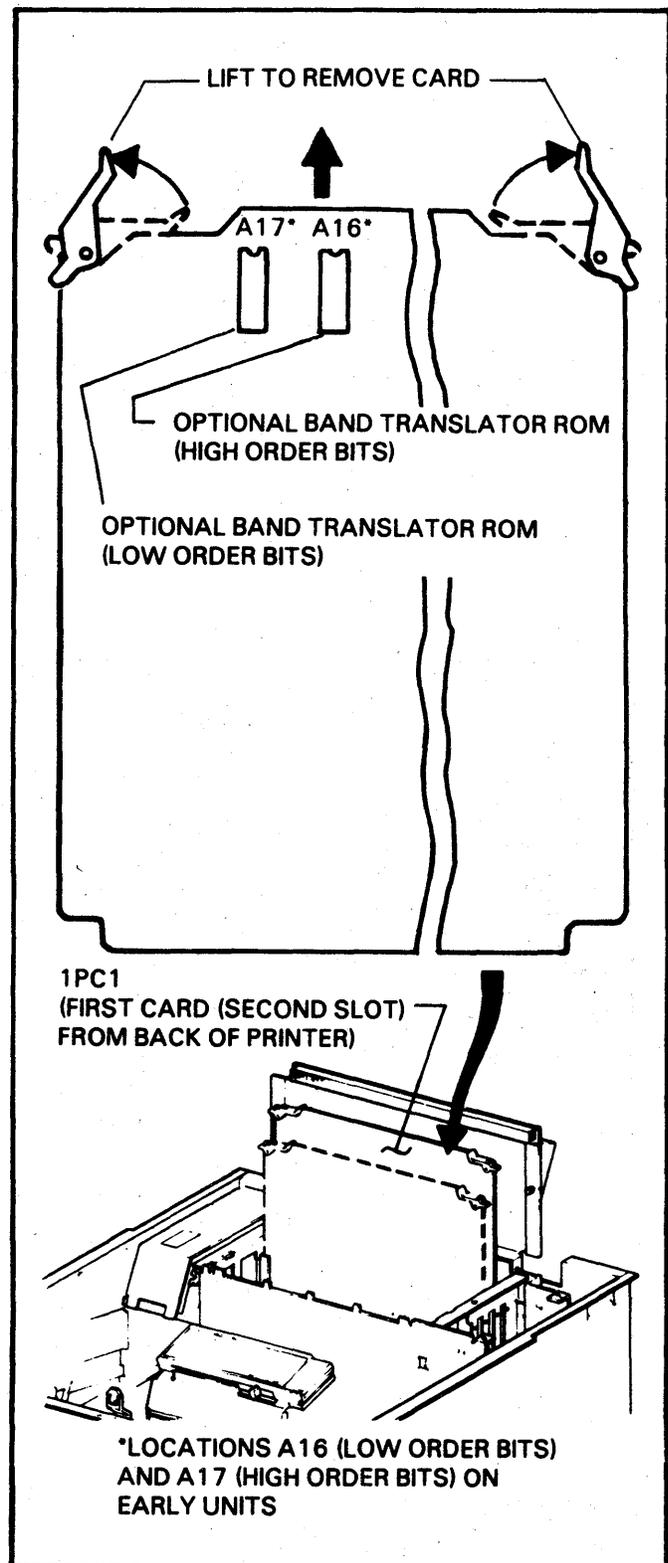


FIGURE 1-2. TRANSLATOR ROM LOCATIONS

4. **For units without front doors:** Install and set up the paper platform or paper basket if provided. See Figure 1-4. Read Paper Basket Installation for the explanation of the basket accessories. The paper platform is installed such that the wires that run perpendicular to the edge of the paper are facing up. This allows the paper to slide along the wires when the paper contacts the paper platform. If the paper platform is installed up-side-down, the paper will catch on the wires as it enters the paper platform and will cause stacking problems.

For units with front doors: Be sure the paper is loaded into the printer properly. See Figure 1-5 for the correct paper path through the printer. Press the FORM FEED switch until approximately 3 or 4 sheets of paper are resting on the paper platform at the back of the printer.
5. Turn the printer's power switch ON (located on the sloping outside surface, directly beneath the Control Panel for units without doors). For units with doors, the power switch is located on the back of the printer.
6. Press the STOP/START switch on the Control Panel. The START INDICATOR should light. Press it again, the START INDICATOR will go out.
7. Press the TEST PRINT switch to print a test pattern. Press the switch again to stop test printing. If printing does not occur or if the printer is performing erratically, assure the switches on cards 1PC1 and 1PC2 are set in the proper factory positions. Refer to Section II.
8. Turn the printer's power switch OFF.
9. Install the I/O cable through the cutout in the back of the printer (bottom right side). See Figure 1-3. The cable and its connector must be CSA certified or rated UL94V-1 or better. Check to be sure the bonnet latches correctly. If it doesn't, the printer may have to be leveled. Leveling is achieved by rotating the appropriate caster's adjusting nut; clockwise will raise the caster, counter-clockwise will lower the caster.
10. The printer is ready to be put On Line with the data source.
11. Close and lock all access covers.
12. Installation and Checkout is now complete.

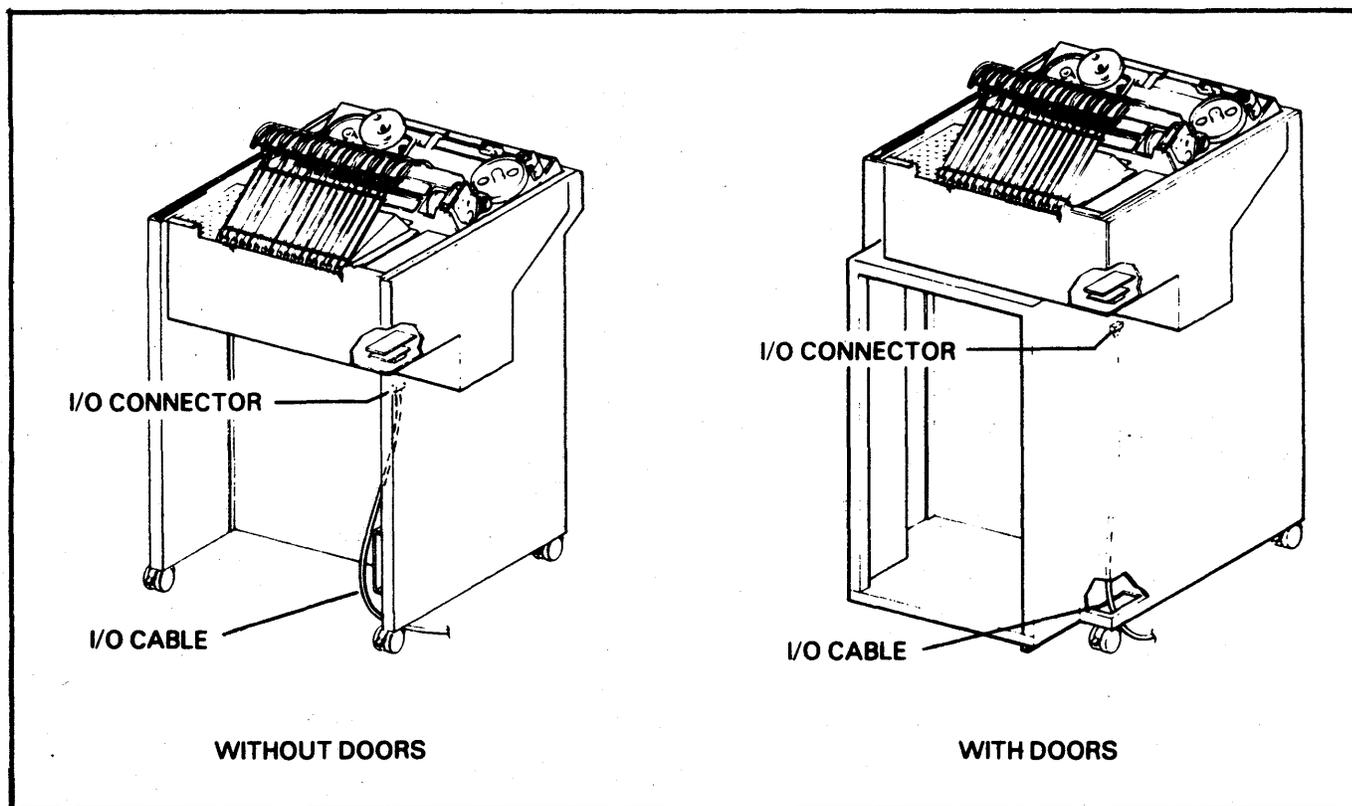


FIGURE 1-3. I/O CABLE INSTALLATION

Paper Basket Installation (See Figure 1-4)

The paper basket mounts on the back of the printer. The thumb screw on each mounting bracket is loosened and the mounting hook on the basket slips down in a hole in the top of the mounting bracket. The thumb screws on both mounting brackets are tightened to secure the paper basket.

The basket can be used with several accessories to insure proper stacking for all types of forms under humid and non-humid conditions. Boxes of forms can be irregular in their natural stacking tendency from box to box. The accessories can be used together, or in any combination to help modify the stacking tendencies of a particular box or a particular type of paper.

The following will describe the use of the accessories and their function.

The Paper Stops are used for all but the very largest forms. They are used to provide a front and rear stacking guides. They can be moved forward or backward depending on the size of the form.

The Paper Bracket Support is installed to control form stacks which have a valley at the top. The valley can be caused by the printer's tractor positions. Check the horizontal tractor positioning if the feed holes on the edges of the forms are not smooth and flat. Forms left in the box at the front of the printer can increase forms tension and deform the feed holes. The paper bracket support is compressed to mount in the bottom center of the basket. This bracket can improve all types of forms stacking.

The Fold Breaker assembly can be installed to help "break" the paper perforations as the paper leaves the printer. This is normally installed.

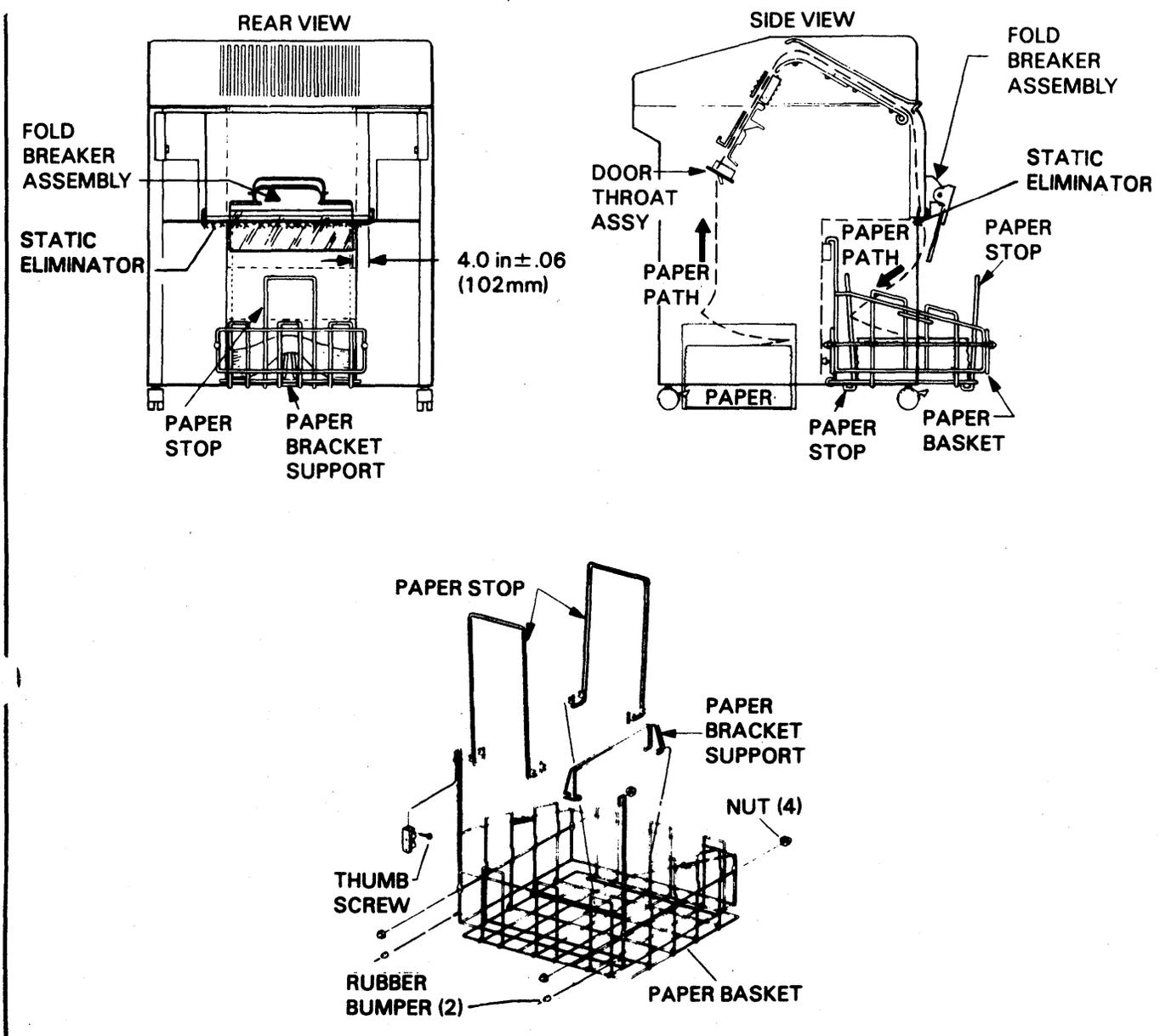


FIGURE 1-4. PAPER BASKET INSTALLATION AND SET-UP

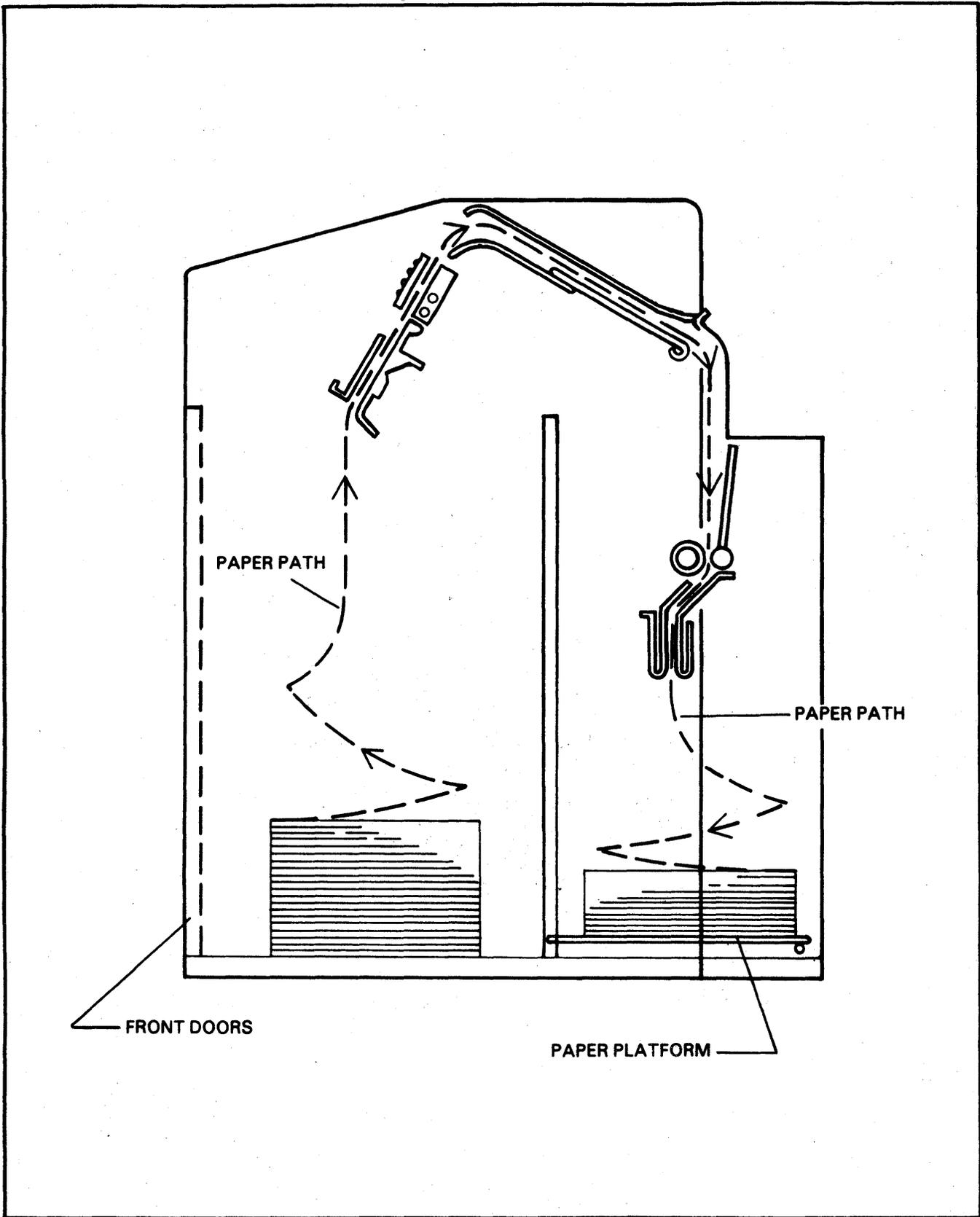


FIGURE 1-5. PAPER PATH FOR PRINTERS WITH FRONT DOORS

SECTION II
FACTORY SWITCH SETTINGS

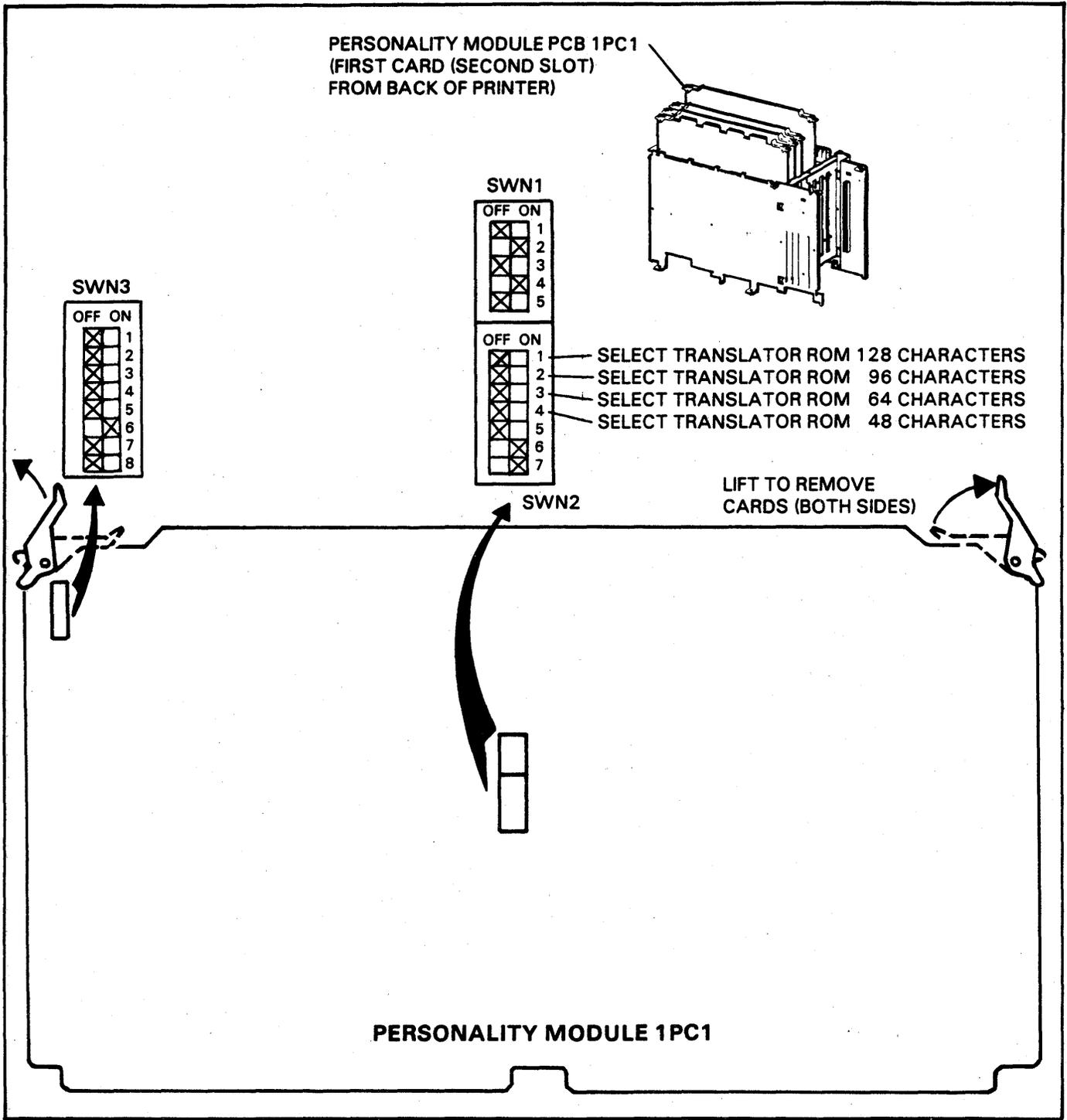


FIGURE 2-1. PERSONALITY MODULE (1PC1) FACTORY SWITCH SETTINGS (FOR ASSEMBLY NUMBER 44682846).

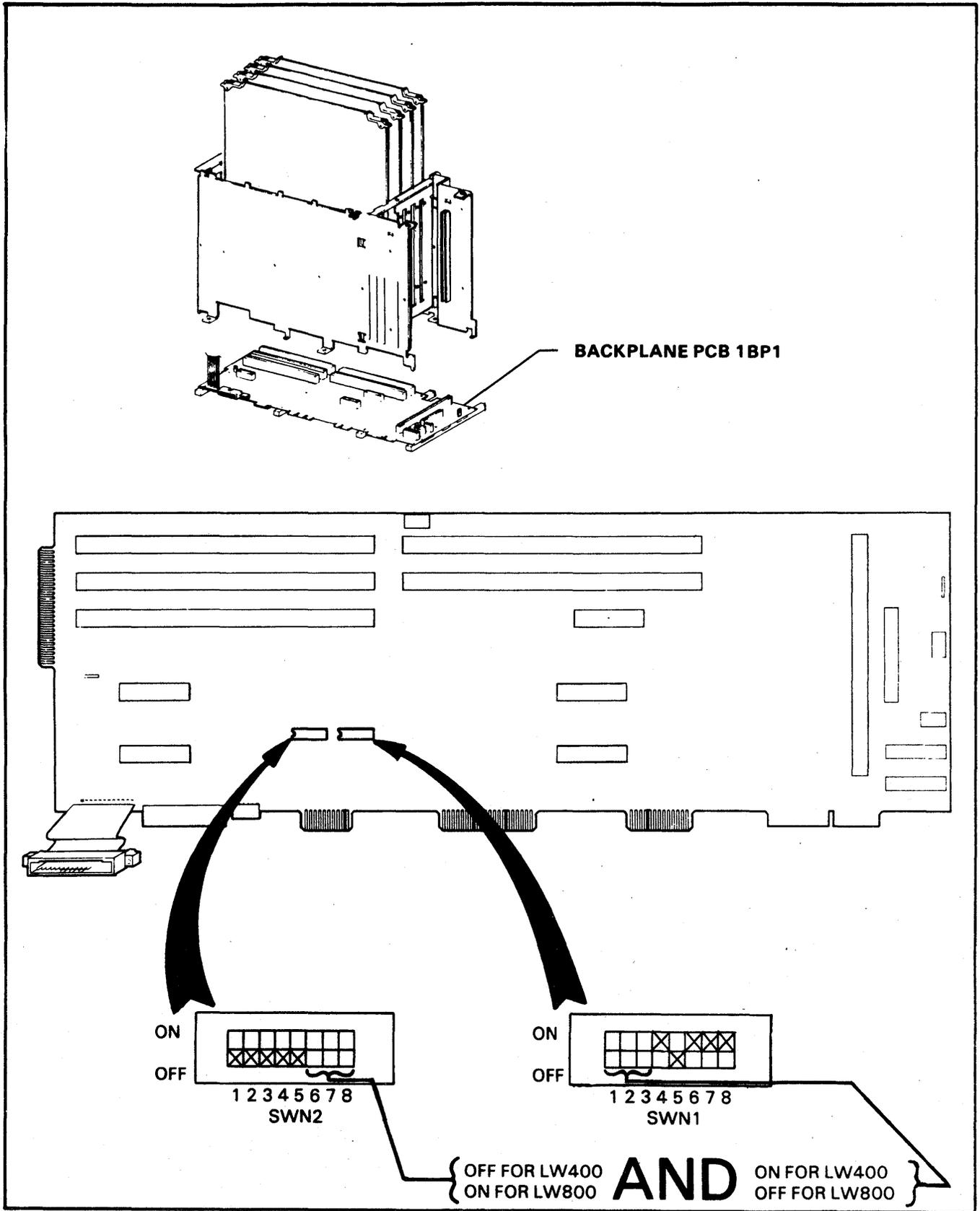


FIGURE 2-4. BACKPLANE (1BP1) FACTORY SWITCH SETTINGS (TWO SWITCH VERSION)

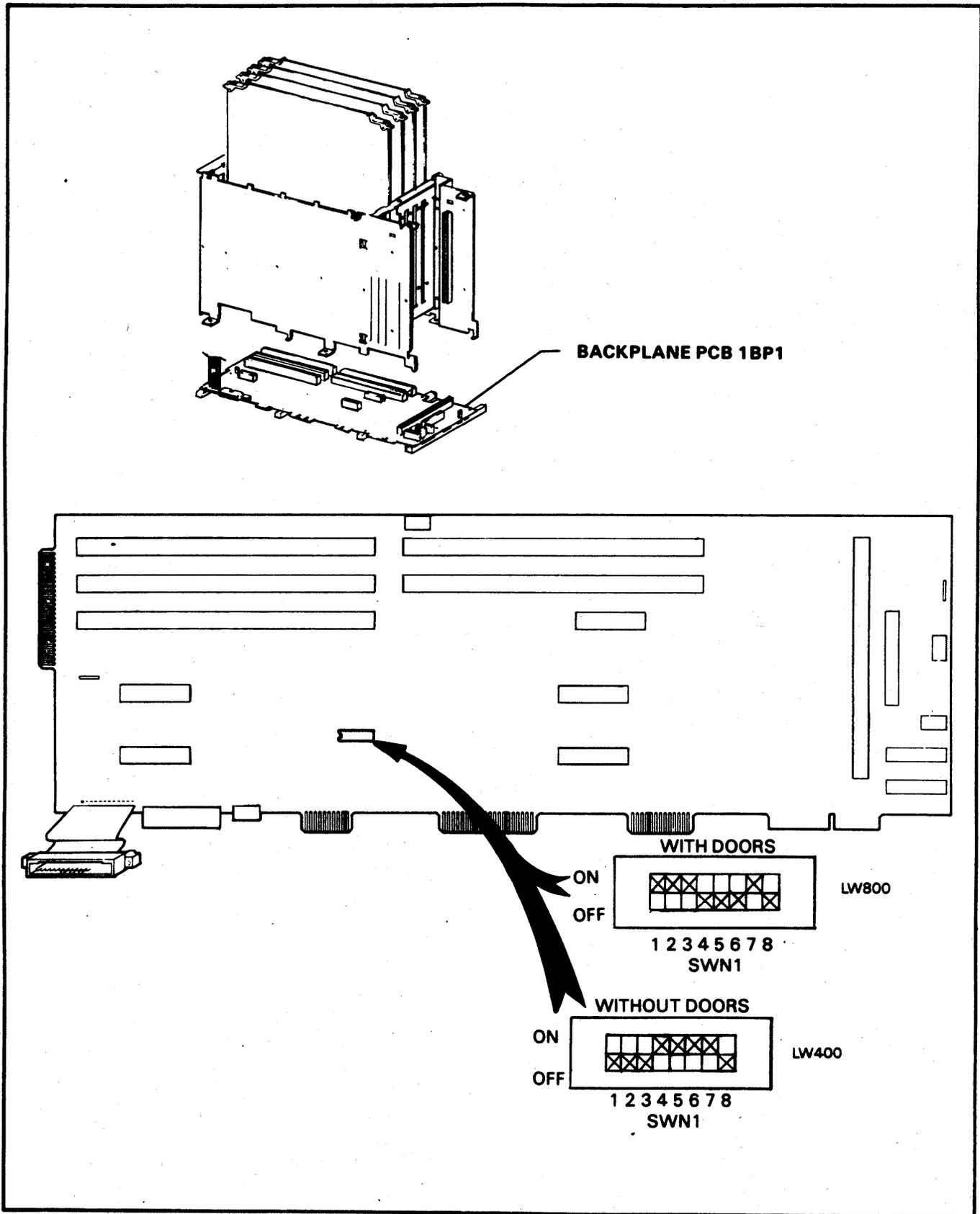


FIGURE 2-5. BACKPLANE (1BP1) FACTORY SWITCH SETTINGS (SINGLE SWITCH VERSION)

SECTION III CHOOSING A LOCATION

The important factors to be considered when choosing a location for the printer are environmental, electrical and service access requirements. Ideally a computer room environment is desired. See Table

3-1 for environmental specifications, Table 3-2 for electrical specifications and Figures 3-1 and 3-2 for service access specifications.

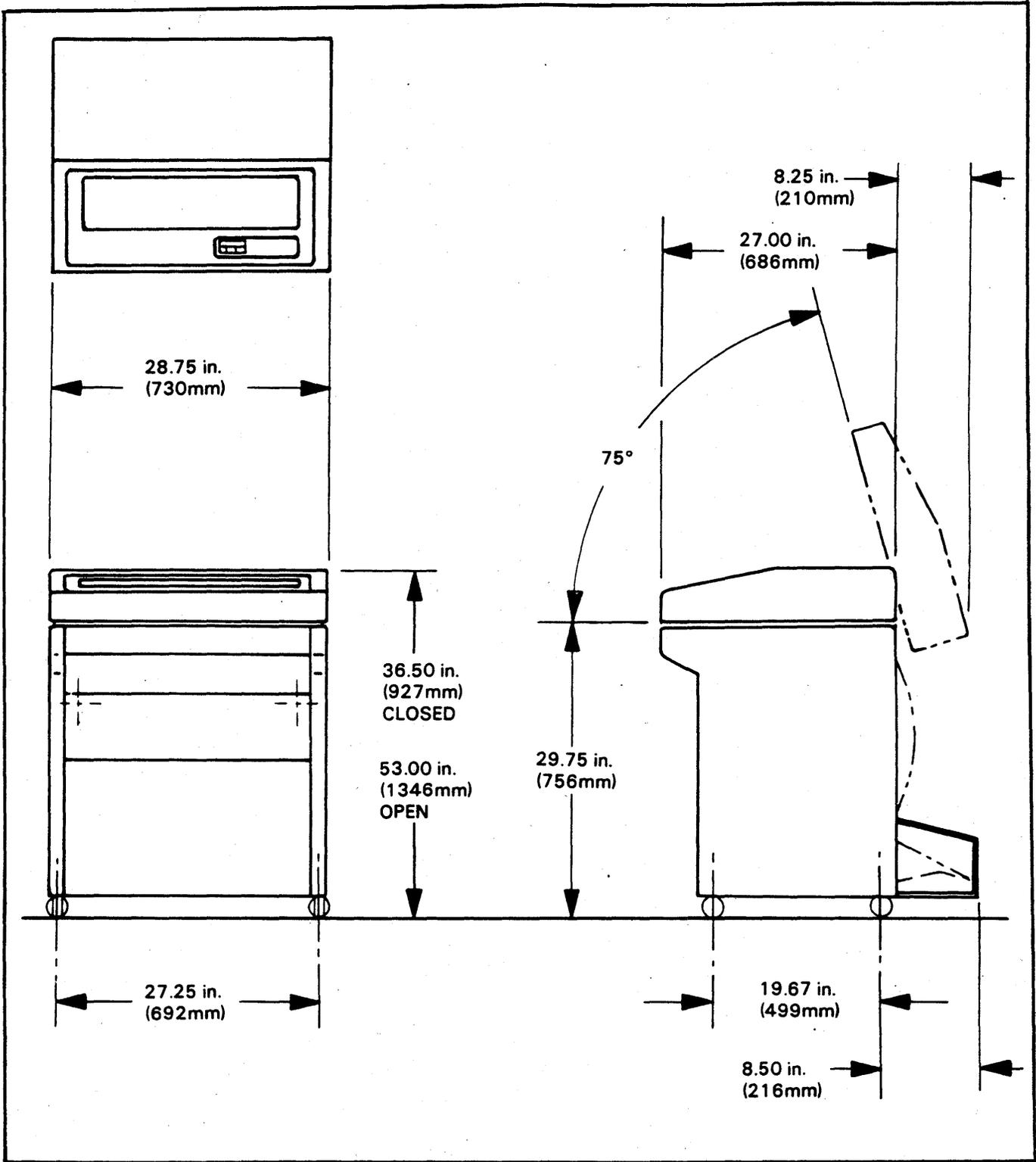


FIGURE 3-1. SERVICE ACCESS SPECIFICATIONS (WITHOUT FRONT DOORS)

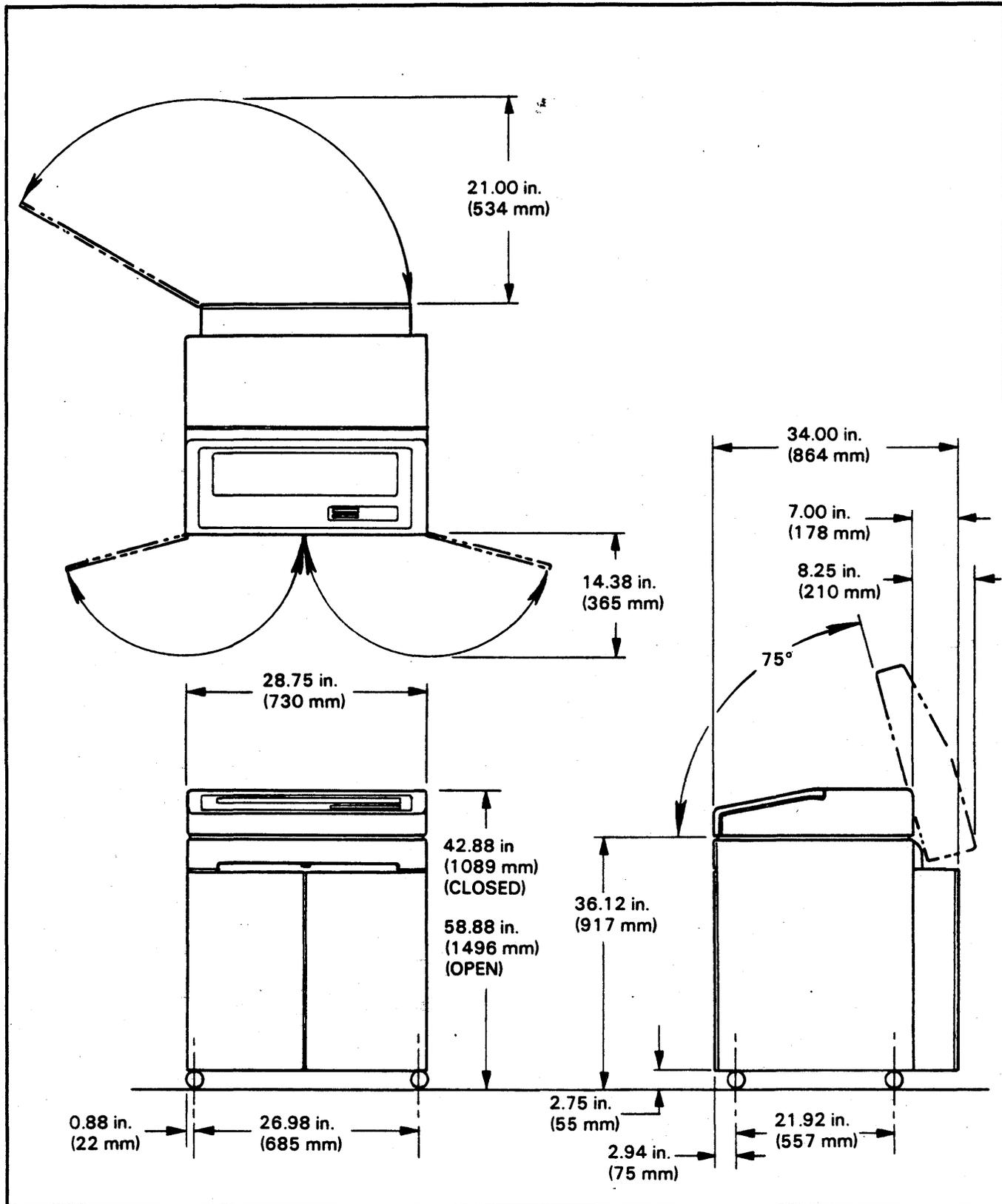


FIGURE 3-2. SERVICE ACCESS SPECIFICATIONS (WITH FRONT DOORS)

TABLE 3-1. ENVIRONMENTAL SPECIFICATIONS

OPERATING TEMPERATURE, HUMIDITY, BAROMETRIC PRESSURE

| | |
|-----------------------------------|--|
| Temperature Range - Dry Bulb..... | 10°C - 40°C (50°F - 104°F) |
| Temperature Change (Max) | 10°C (18°F) per 60 minutes |
| Relative Humidity Range | 20 - 80% |
| Humidity Change (Max) | 10% per 60 minutes |
| Dew Point Temperature | Maximum 26°C (79°F) |
| Restrictions | Minimum -4°C (25°F) |
| Barometric Pressure Standard..... | 105 Kilopascals (kpa) 79.5 Kilopascals (kpa) (maximum equivalent altitude 6560 feet or 2000 meters) |
| High Altitude (Option) | 105-Kilopascals (kpa) 69 Kilopascals (kpa) (maximum equivalent altitude 9850 feet or 3000 meters) |

A high altitude optional cooling system is required for altitudes between 6560 and 9850 feet or the maximum temperature should be derated from 95°F to 87°F between 6560 to 9850 feet.

Maximum temperature of 104°F applies at altitudes up to 1000 feet. Above this altitude, the maximum temperature is derated linearly to 95°F at 6560 feet.

NON-OPERATING TEMPERATURE, HUMIDITY, BAROMETRIC PRESSURE

| | |
|--|----------------------------------|
| Storage (Period Up To 3 Months) | |
| Temperature Range | -10°C to 50°C (14°F to 122°F) |
| Temperature Change/Rate..... | 15°C (27°F) per hour maximum |
| Humidity Range..... | 10 to 90% R.H. non-condensing |

TRANSIT (Period Up To One Week)

| | |
|------------------------------|--|
| Temperature Range | -40°C to 60°C -40°F to 140°F |
| Temperature Change/Rate..... | 20°C (36°F) per hour maximum |
| Humidity Range..... | 5 to 95% R.H. |
| Barometric Pressure..... | 105 Kilopascals (kpa) 38 Kilopascals (kpa) (Maximum equivalent altitude 25,000 feet or 7600 meters) |

TABLE 3-2. ELECTRICAL SPECIFICATIONS

| | | 60 HZ UNIT |
|----|-----------------|--|
| a. | Voltage | 104 to 128 (nominal 120 VAC RMS) |
| b. | Phase | Single |
| c. | Frequency | 59.0 to 60.6 Hz |
| d. | Current | Less than 4.5 amps LW400 Less than 5.3 amps LW400 (With doors) Less than 6.1 amps LW800 Less than 6.8 amps LW800 (With doors) |
| e. | VA | 575 VA max - LW400 675 VA max - LW400 (With doors) 775 VA max - LW800 870 VA max - LW800 (With doors) |

| | | 50 HZ UNIT |
|----|-----------------|---|
| a. | Voltage | Range 1 - 191 to 235 VAC RMS (Nominal 220 VAC RMS) Range 2 - 208 to 256 VAC RMS (Nominal 240 VAC RMS) |
| b. | Phase | Single |
| c. | Frequency | 49.0 to 50.5 Hz |
| d. | Current | Range 1 - less than 2.75 amps LW400 Range 1 - less than 3.3 amps LW400 (With doors) Range 1 - less than 3.7 amps LW800 Range 1 - less than 4.1 amps LW800 (With doors) Range 2 - less than 2.5 amps LW400 Range 2 - less than 3.0 amps LW400 (With doors) Range 2 - less than 3.4 amps LW800 Range 2 - less than 3.9 amps LW800 (With doors) |
| e. | VA | 645 VA max. - LW400 765 VA max. - LW400 (With doors) 875 VA max. - LW800 970 VA max. - LW800 (With doors) |

| | | 50 HZ/60 HZ UNIT |
|----|-----------------|--|
| a. | Voltage | 50 Hz - Range 1 - 191 to 235 (nominal 220 VAC RMS) 50 Hz - Range 2 - 208 to 256 (nominal 240 VAC RMS) 50 Hz - Range 4 - 87 to 107 (nominal 100 VAC RMS) 60 Hz - Range 3 - 104 to 128 (nominal 120 VAC RMS) 60 Hz - Range 5 - 87 to 107 (nominal 100 VAC RMS) |
| b. | Phase | Single |
| c. | Frequency | 50 Hz - 49.0 to 50.5 Hz 60 Hz - 59.0 to 60.6 Hz |
| d. | Current | 50 Hz - Range 1 less than 2.75 amps LW400 Range 1 less than 3.3 amps LW400 (With doors) Range 1 less than 3.7 amps LW800 Range 1 less than 4.1 amps LW800 (With doors) Range 2 less than 2.5 amps LW400 Range 2 less than 3.0 amps LW400 (With doors) Range 2 less than 3.4 amps LW800 Range 2 less than 3.9 amps LW800 (With doors) Range 4 less than 6.0 amps LW400 Range 4 less than 7.1 amps LW400 (With doors) Range 4 less than 8.0 amps LW800 60 Hz - Range 3 less than 4.5 amps LW400 Range 3 less than 5.3 amps LW400 (With doors) Range 3 less than 6.1 amps LW800 Range 3 less than 6.9 amps LW800 (With doors) Range 5 less then 5.25 amps LW400 Range 4 & 5 less then 6.2 amps LW400 (With doors) Range 4 & 5 less then 7.25 amps LW800 Range 4 & 5 less then 8.0 amps LW800 (With doors) |
| e. | VA | 575 VA max - 60 Hz LW400 675 VA max - 60 Hz LW400 (With doors) 645 VA max - 50 Hz LW400 765 VA max - 50 Hz LW400 (With doors) 775 VA max. - 60 Hz LW800 870 VA max. - 60 Hz LW800 (With doors) 875 VA max. - 50 Hz LW800 970 VA max. - 50 Hz LW800 (With doors) |

SECTION IV INPUT POWER CONVERSIONS

The printer comes from the factory specifically wired for your application. Conversion within the printer from one frequency of operation to another is only available on optional 50/60 Hz units. The conversion requires reprogramming the ac power board plug for the required configuration if the unit is equipped with a universal programming board (4PC1) as shown in Figure 4-1, or by repositioning fast-on terminal connectors to new positions on a terminal strip as shown in Figure 4-2, and changing the 50 HZ or 60 HZ band pulley. 60 HZ units come equipped with a power cord and is terminated with a non-locking 3 prong plug, 50 HZ units come equipped with a power cord which is terminated without a plug at the wall plug end. Refer to Figure 4-1 for input power frequency modifications for early units with a universal programming board. Refer to Figure 4-2 for input power frequency modifications for units with a terminal strip. The extra 50 Hz or 60 Hz band pulley is stored on early units, in an accessory box. In later units it is stored in the printer's interior and is located beneath the right rear power board cover (as viewed from the front of the printer with the bonnet open).

REMOVE POWER

To change voltage on units equipped with a universal program board, move the voltage selection jumper plug from its present position on 4PC1 J1-J5 to the selected voltage position J1, J2, J3, J4 or J5 (See Figure 4-1).

To change voltage on units equipped with a terminal strip, follow the wiring diagram label instructions above the terminal strip or Figure 4-2.

For frequency and voltage changes perform the following procedure:

REMOVE POWER

1. Change the Band Drive Pulley as follows. Remove the ribbon and print band, refer to the Operator Instruction Cards beneath the printer's bonnet. Remove the band motor flywheel by removing the nut on top. Refer to the Maintenance Manual procedure, Right Band Pulley and Shaft Replacement for a drawing of the parts.

2. Loosen the band motor mounting screws to release belt tension.
3. Pry up on the pulley to remove. Replace the pulley with the other frequency pulley in the location described above. The 50 Hz pulley is larger than the 60 Hz pulley.
4. Position the drive belt on the pulley and perform the Band Drive Belt Adjustment procedure in the Maintenance Manual.
5. Install the flywheel and its nut. Install the band and ribbon. Perform the Band Tracking Adjustment procedure in the Maintenance Manual.

If the unit is equipped with a universal program board (4PC1), refer to Figure 4-1 and perform steps 6 thru 8. If the unit is equipped with a terminal strip, refer to Figure 4-2 and perform steps 9 thru 11.

6. Move the frequency plug to the correct frequency position on 4PC1 J9 (50 Hz), J10 (60 Hz).
7. Change the transformer cables for 50 and 60 Hz on the backplane board 1BP1-J9 with the unused cable plugged into the storage location on 4PC1.
8. Move the voltage selection jumper plug on 4PC1 to the correct voltage position J1, J2, J3, J4, or J5.
9. Change the transformer cables, P9-60HZ (whichever frequency is desired) on backplane board 1BP1-J9.
10. Move the fast-on terminal connectors to new positions on the terminal strip. Refer to the wiring diagram label above the terminal strip or Figure 4-2.
11. For 100VAC, 120 VAC, 220 VAC (60HZ or 50HZ), 1BP1-P8/P14 should be plugged into 1BP1-J8. For 240 VAC (50HZ), 1BP1-P8/P14 should be plugged into 1BP1-J14.

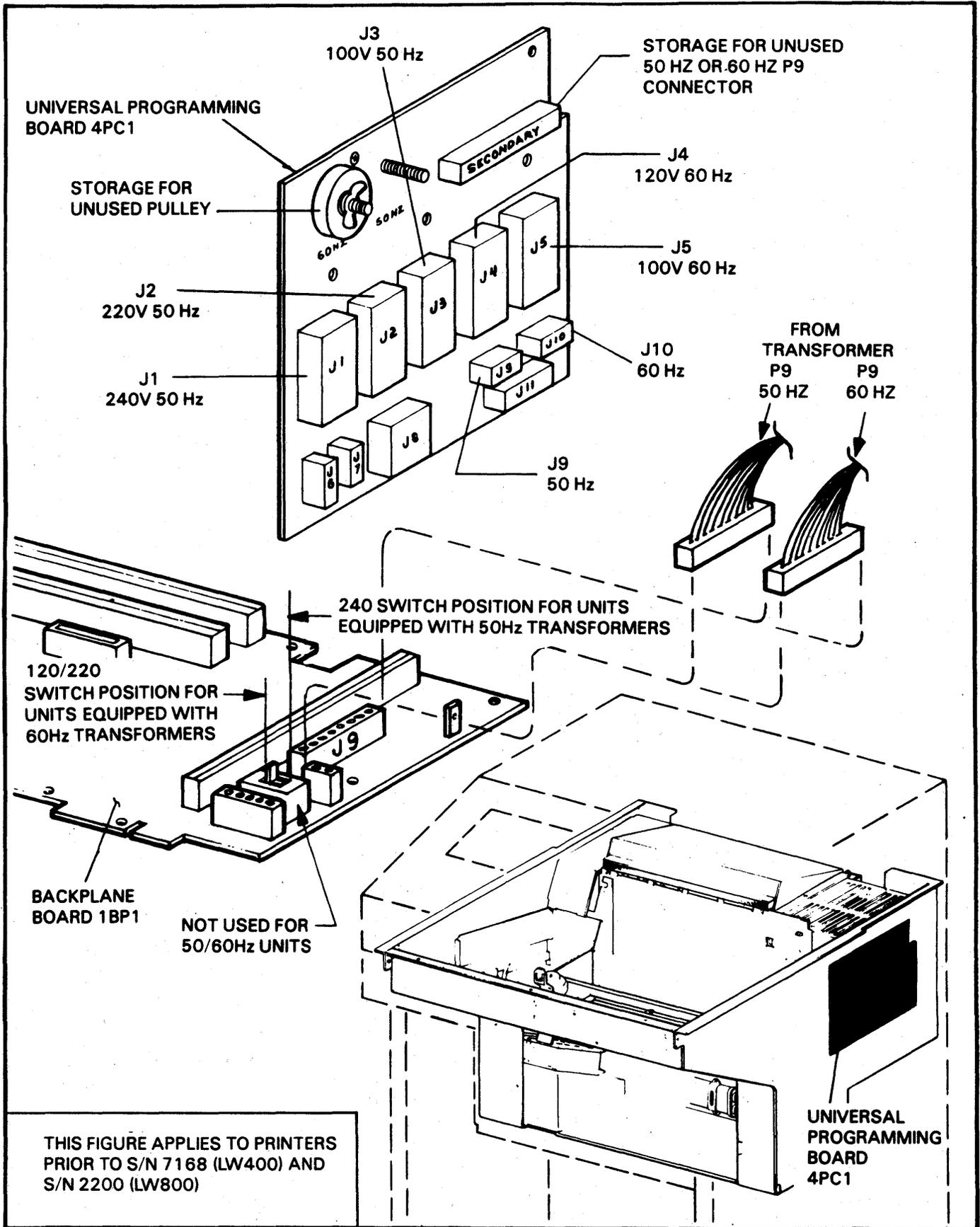


FIGURE 4-1. INPUT POWER/FREQUENCY MODIFICATIONS (EARLY UNITS)

THIS FIGURE APPLIES TO PRINTERS WITH S/N \geq 7168 (LW400) AND S/N \geq 2200 (LW800)

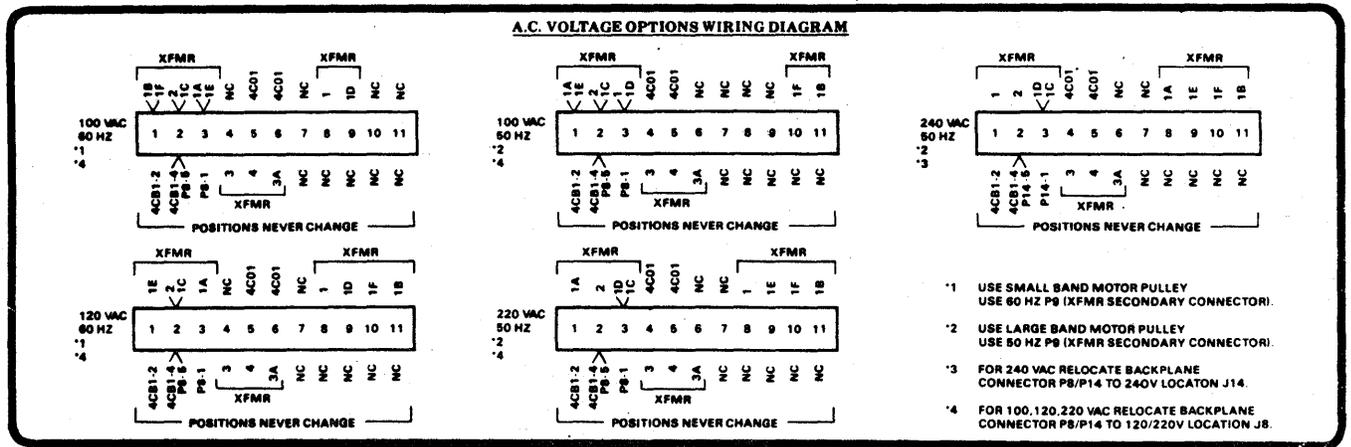
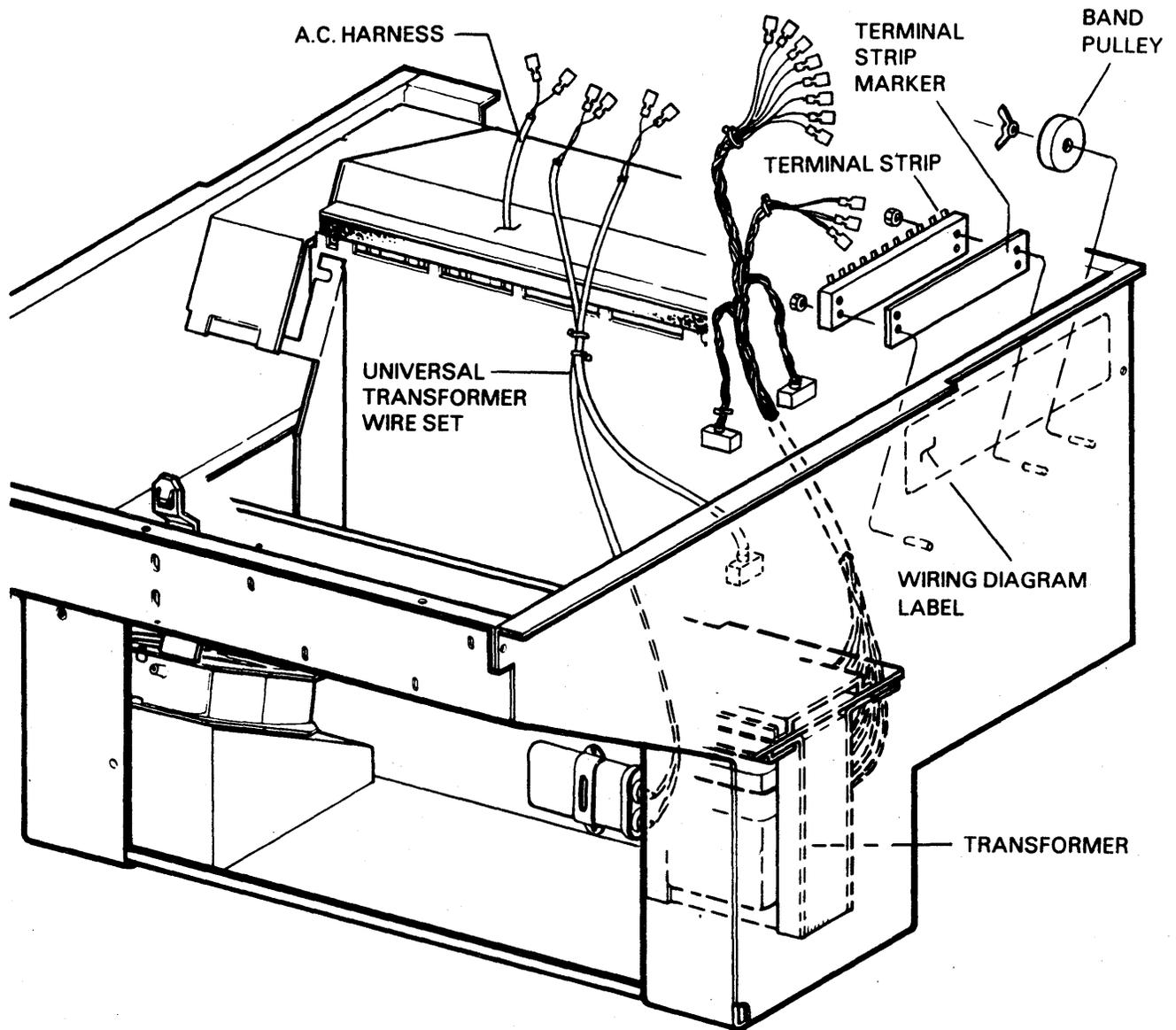


FIGURE 4-2. INPUT POWER/FREQUENCY MODIFICATIONS

SECTION V INTERFACE SIGNALS

This section describes the interface signals associated with this interface. The minus sign before a signal name indicates the actual signal line has a negated logical sense being active when logical "0". A plus indicates positive logical sense being active when at a logical "1".

Band Identification 0 and 1

Two signal lines from the printer to the data source contain binary coded information which identifies the type of band currently on the printer.

Bottom of Forms (BOF)

This is a status line which is active (logic 1) when the forms are at the Bottom of Forms position. The line goes active when the form moves to the Bottom of Forms position, and goes inactive when it leaves this position. In non EVFU machines, Bottom of Forms is defined as being 3, 4, 5, or 6 lines (defined by DIP switches on the CPU board) before the Top of Forms position for either the Fixed Forms Length or the Selectable Forms Length Control Mode.

When the EVFU option is loaded, the Bottom of Forms location is defined by either Channel 2, 8, or 12 by use of DIP switches on the CPU board.

-Buffer Clear

A signal from the data source (logic 0) to the printer that resets the print line buffer to column one if a forms motion command has not yet been received.

Data Strobe

A signal from the data source to the printer which indicates that a data character has been placed on the data lines.

Data 1 Thru 8 and Paper Instruction

These are signal lines from the data source to the printer which carry the codes for print data and forms motion commands.

Demand

A signal from the printer which is used to synchronize data transfer from the data source to the personality module.

EVFU Installed and EVFU Verify

In order to allow the data source to verify that the printer has an EVFU capability, the EVFU verify switch on the personality module must be closed.

Interface Verify

This allows the data source to verify that the I/O connector has been attached by jumpering pins 46 and 45 on the I/O connector together on the personality module.

On Line

A signal from the printer which, when active (logic 1) indicates to the data source that the printer has been placed On Line.

Parity Error

This is a signal line from the printer that will go active when a parity error is detected.

Parity Input

This is a signal line from the data source to the printer that will make the right parity sum (odd or even) for each character on the data lines.

Ready

A signal from the printer which when active (logic 1) indicates that no faults exist within the printer, paper is loaded and the printer is ready to be placed On Line.

Top of Forms (TOF)

This is a status line which is active (logic "1") when

the forms are at the Top Of Forms position. The line goes active when the form moves to the Top Of Forms position, and goes inactive when it leaves this position. The Top of Forms location is defined by a counter in Forms Length Control mode, or by Channel 1 when the EVFU is loaded.

VFU RDY

This is a status line to the data source that when active indicates that the VFU is ready.

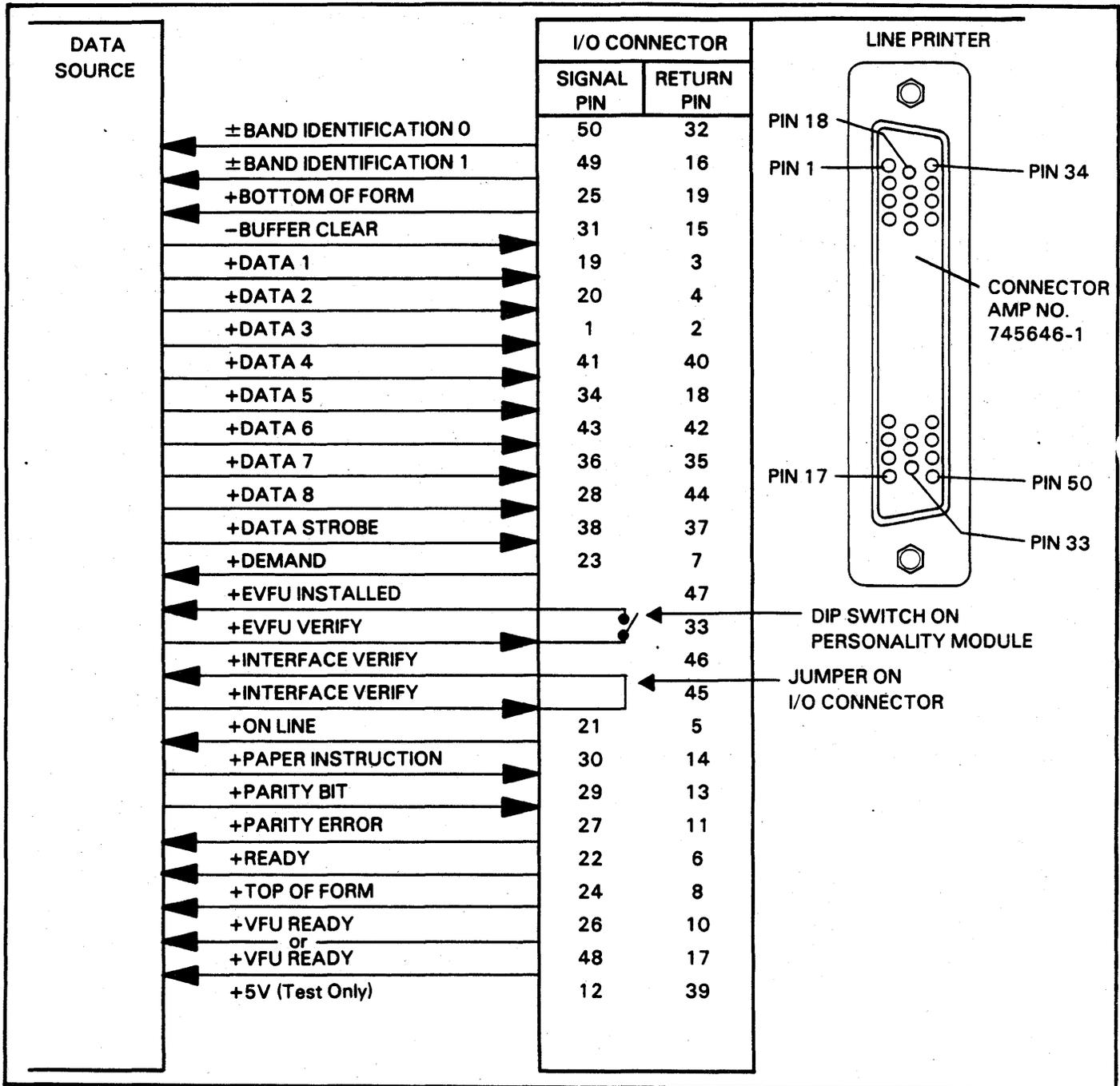


FIGURE 5-1. I/O SIGNALS AND PIN ASSIGNMENTS-"D" TYPE CONNECTOR

NOTES

A large, empty rectangular box with a black border, occupying most of the page. It is intended for the user to write their notes.

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 CONTROL DATA