

44689059



**LINEWRITER 400/800
MODELS CT301-D AND CT302-D
WITH SERIES 1 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 AUG., '83	Pre-release of the Linewriter 400 (CT-301-D) Set-Up and Reference Manual.
A NOV., '83	Release of the Linewriter 400 (CT301-D) 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 miscellaneous corrections and the following ECO's: ECO PH20308-"A" Release 55 dB(A) product specification.
E APRIL '85	Added Backplane Switch Settings and the following ECO's: ECO PH20598

PUBLICATION NO.
44689059

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-D	5-12	59829803	Series 1 I/O Connector
CT302-D	3-8	59829853	Series 1 I/O Connector

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 OEM Parallel Interface)	44689053
Set-Up and Reference Manual (With RS-232 Serial Interface)	44689037
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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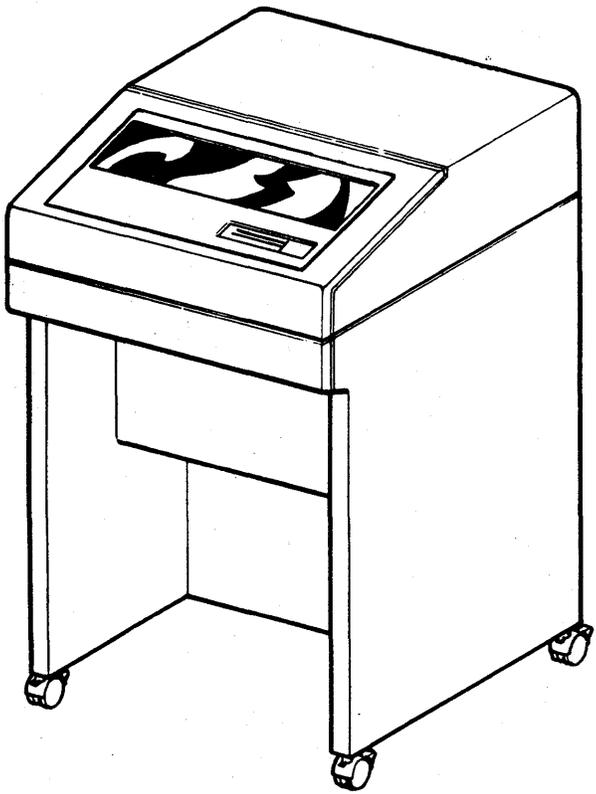
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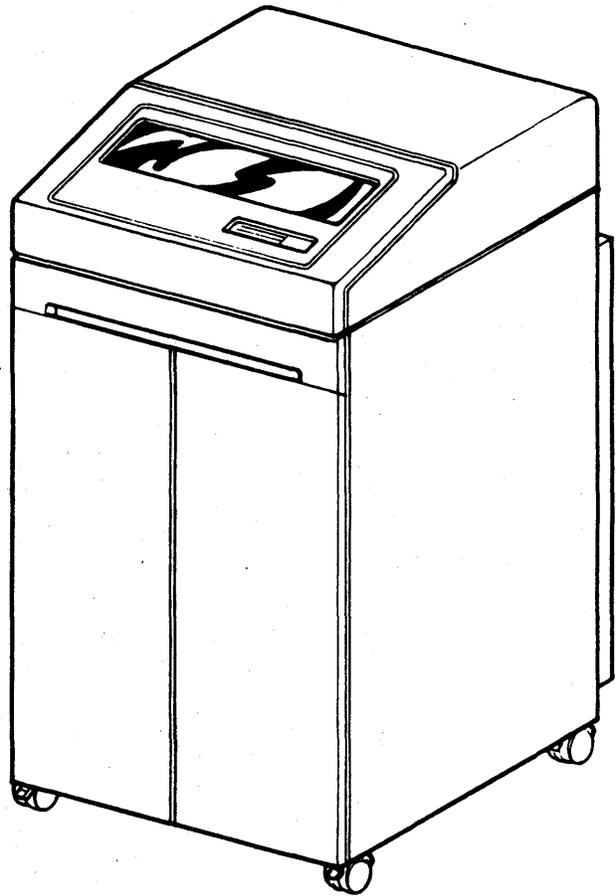
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WITHOUT DOORS



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.

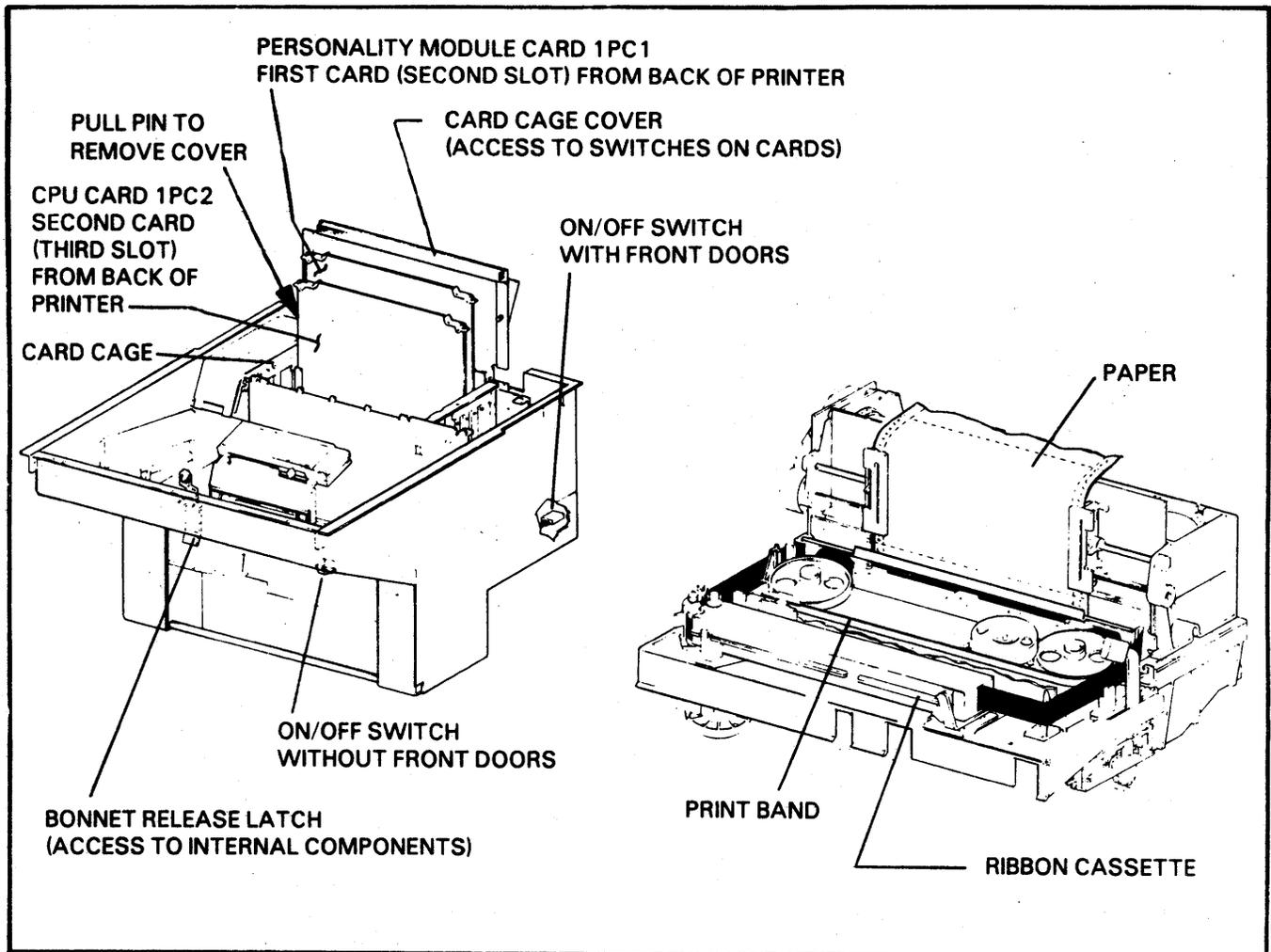


FIGURE 1-1. INSTALLATION AND CHECKOUT MAJOR COMPONENTS

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).
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.

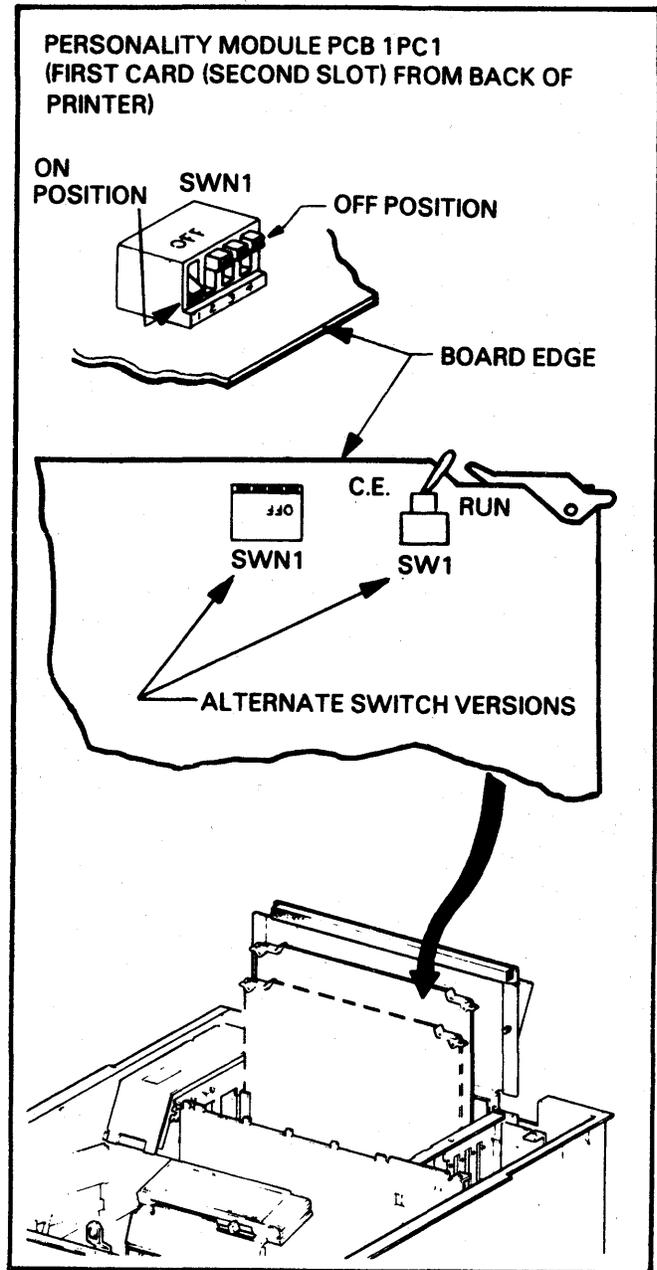


FIGURE 1-2. RS-232 PERSONALITY MODULE (1PC1) SWITCHES

8. Check the Diagnostic Test Print feature as follows:
 - a. Press the START/STOP switch on the Control Panel.
 - b. Open the Card Cage Cover and set SWN1 (or SW1 on early units) to the "OFF" or "CE" position. See Figure 1-2.
 - c. Press START/STOP switch on the Control Panel. A diagnostic message will print until the START switch is pressed again.
 - d. Stop the diagnostic test by pressing the START/STOP switch. Return SWN1 or SW1 to the "ON" or "RUN" position.
9. Turn the printer's power switch OFF.
10. 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.
11. The printer is ready to be put On Line with the data source.
12. Close and lock all access covers.
13. Installation and Checkout is now complete.

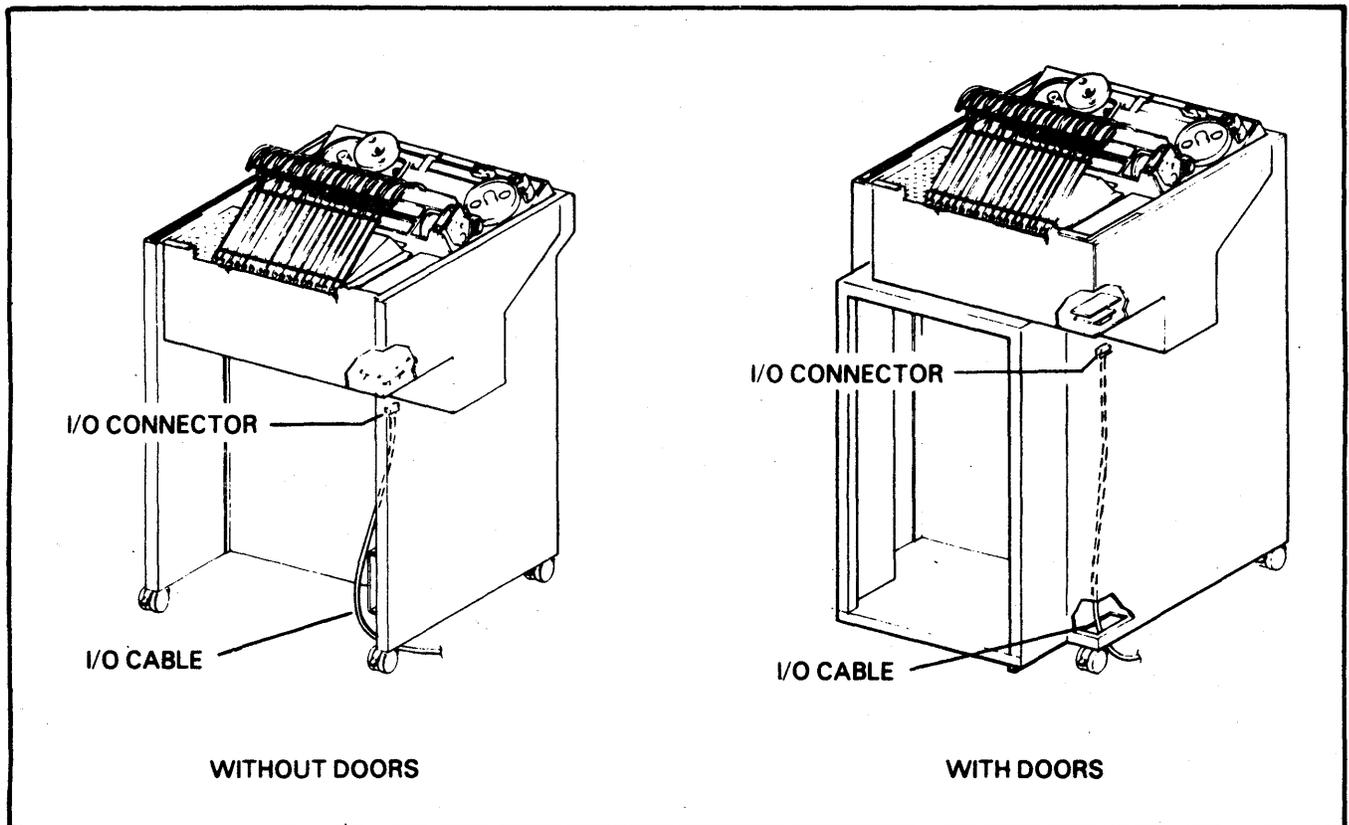


FIGURE 1-3. I/O CABLE INSTALLATION

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.

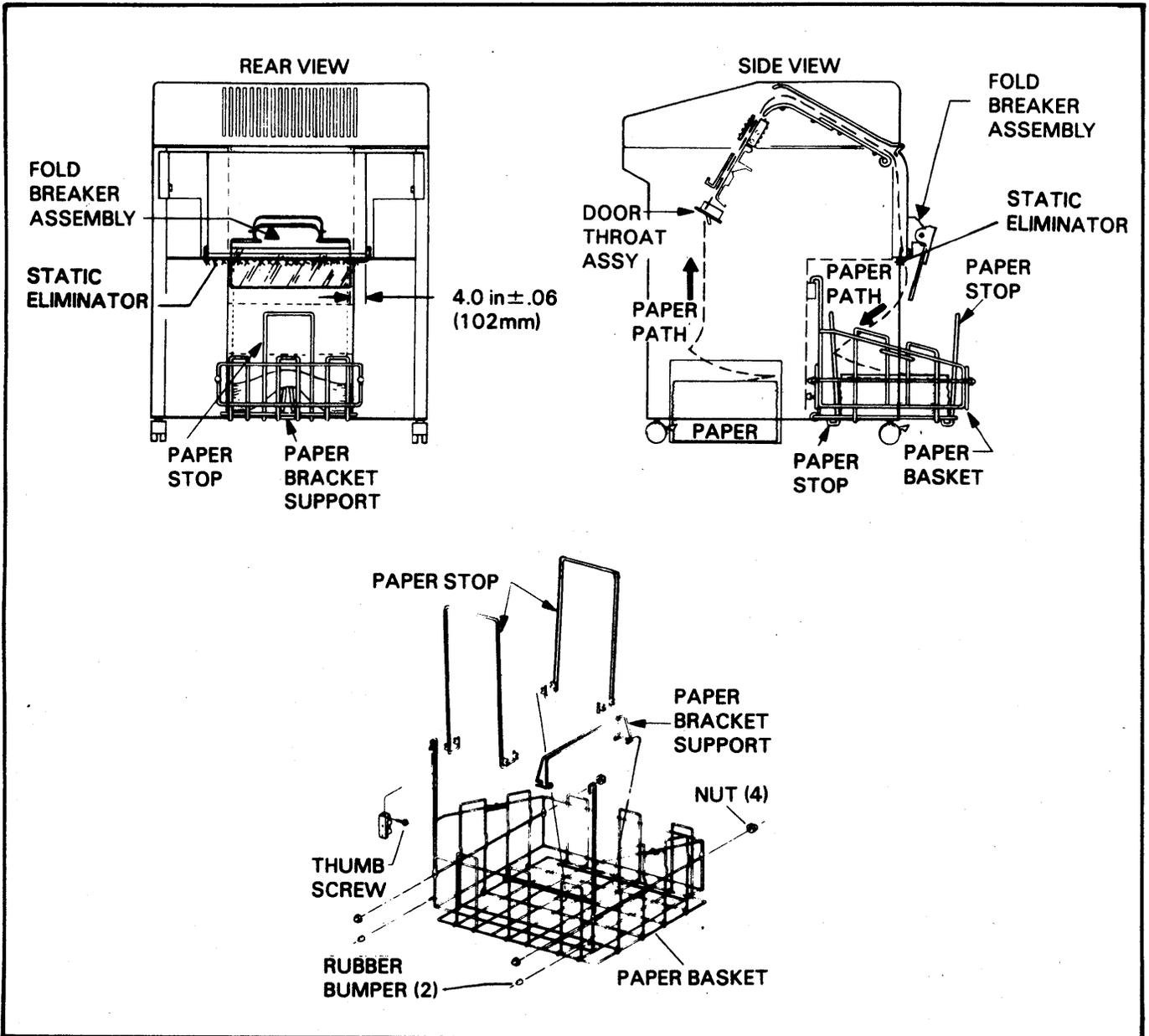


FIGURE 1-4. PAPER BASKET INSTALLATION AND SET-UP

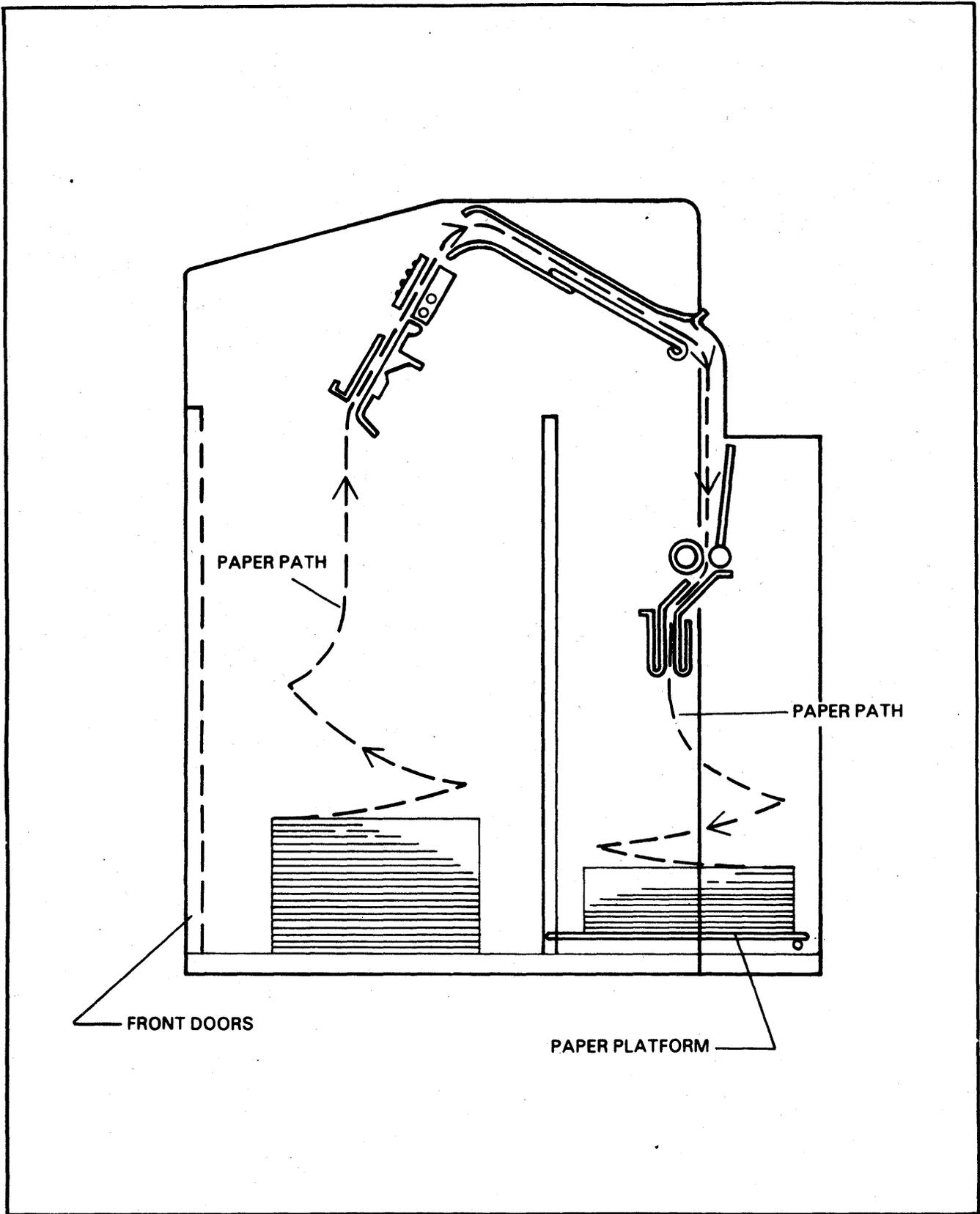


FIGURE 1-5. PAPER PATH FOR PRINTERS WITH FRONT DOORS

SECTION II
FACTORY SWITCH SETTINGS

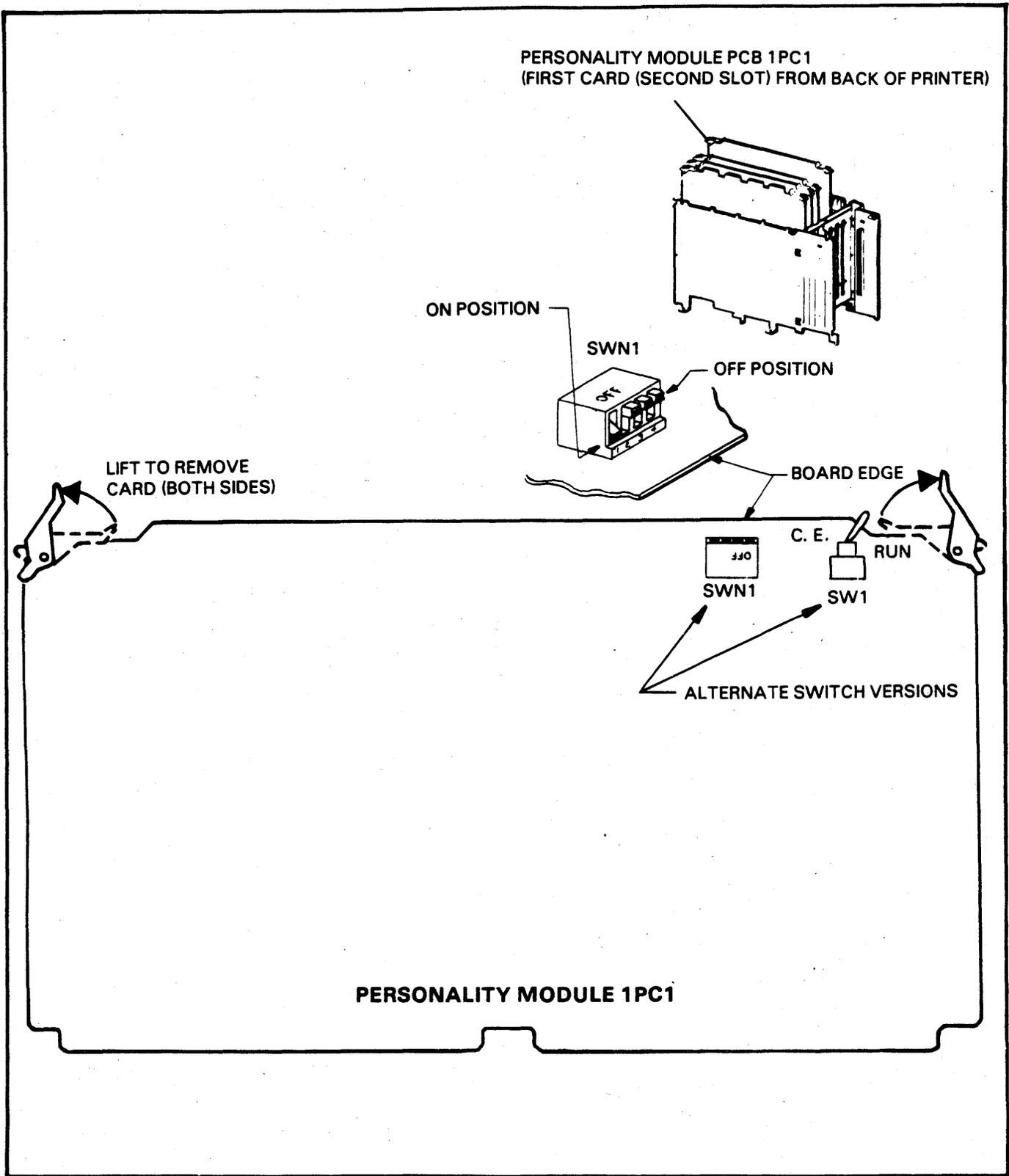


FIGURE 2-1. PERSONALITY MODULE (1PC1) FACTORY SWITCH SETTINGS.

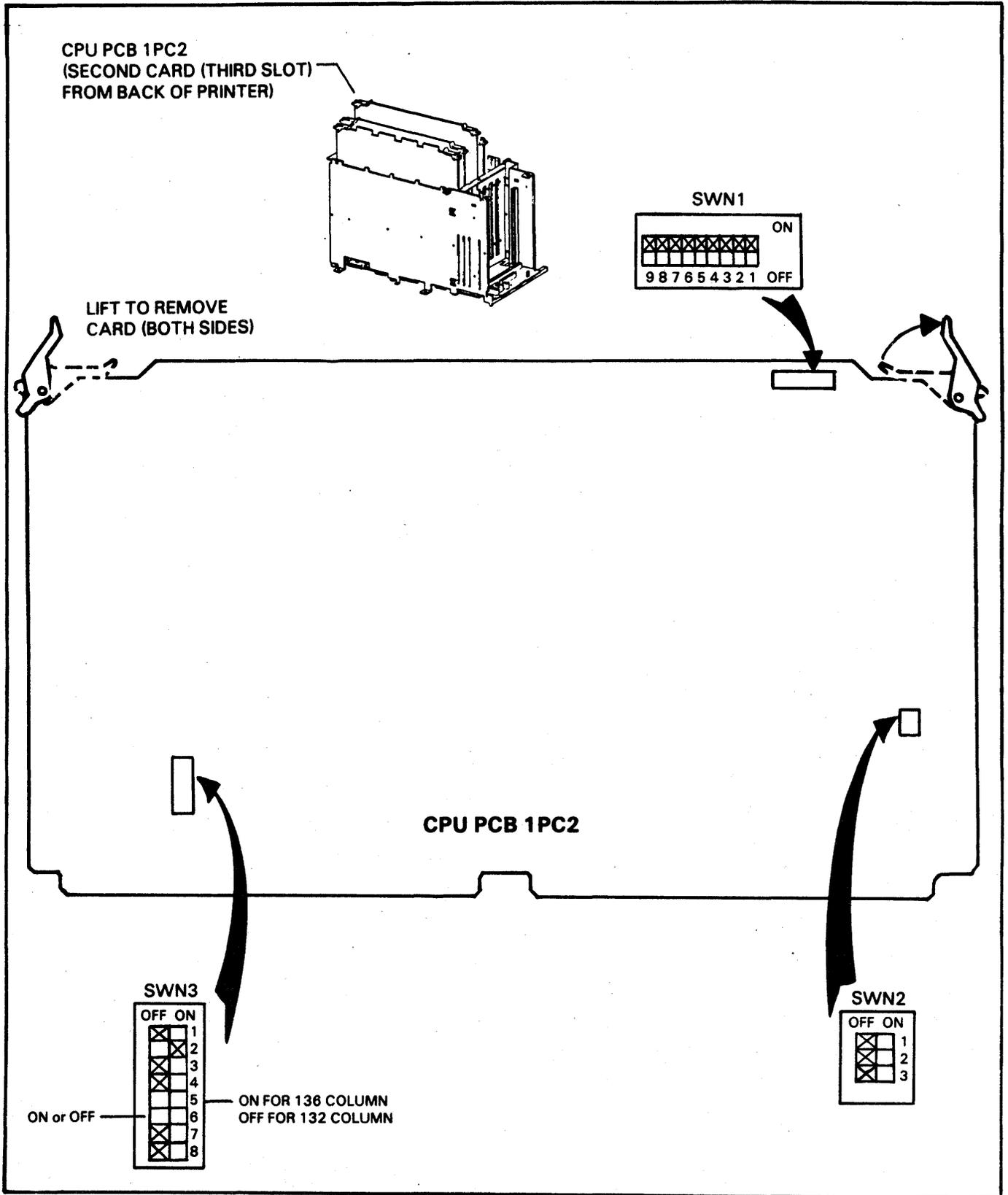


FIGURE 2-2. CPU (1PC2) FACTORY SWITCH SETTINGS

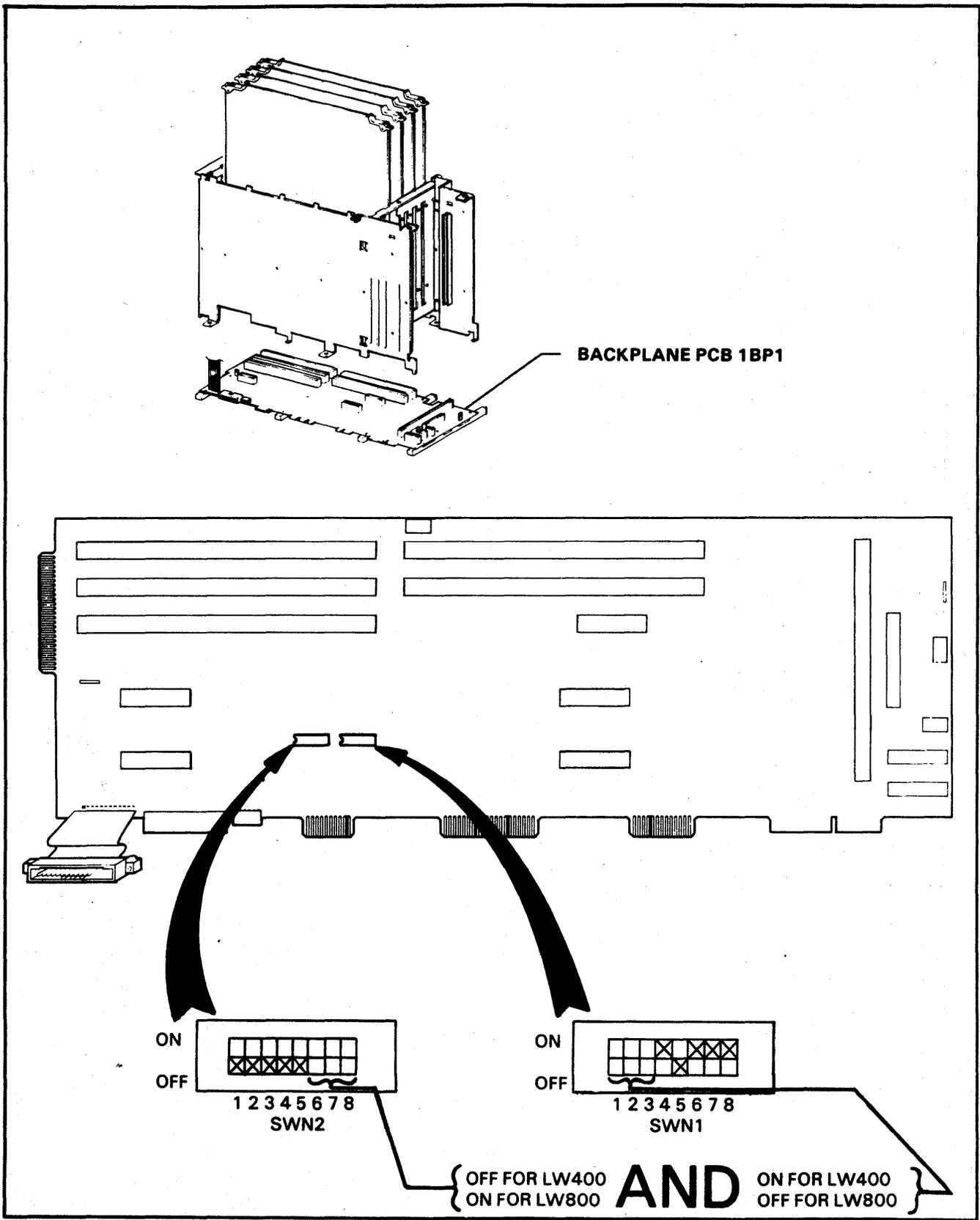


FIGURE 2-3. BACKPLANE (1BP1) FACTORY SWITCH SETTINGS (TWO SWITCH VERSION)

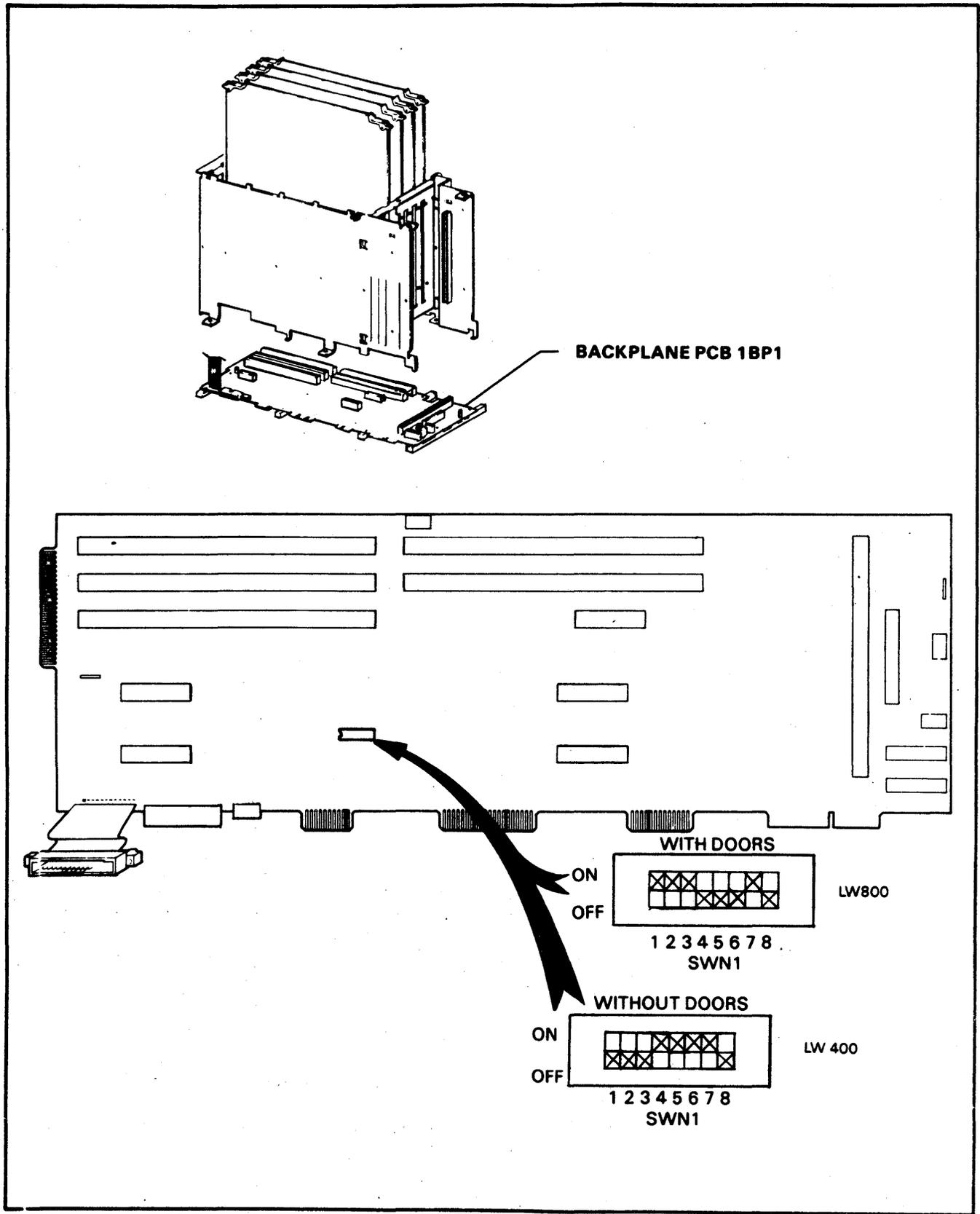


FIGURE 2-4. BACKPLANE (1BP1) FACTORY SWITCH SETTINGS (SINGLE SWITCH VERSION)

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.

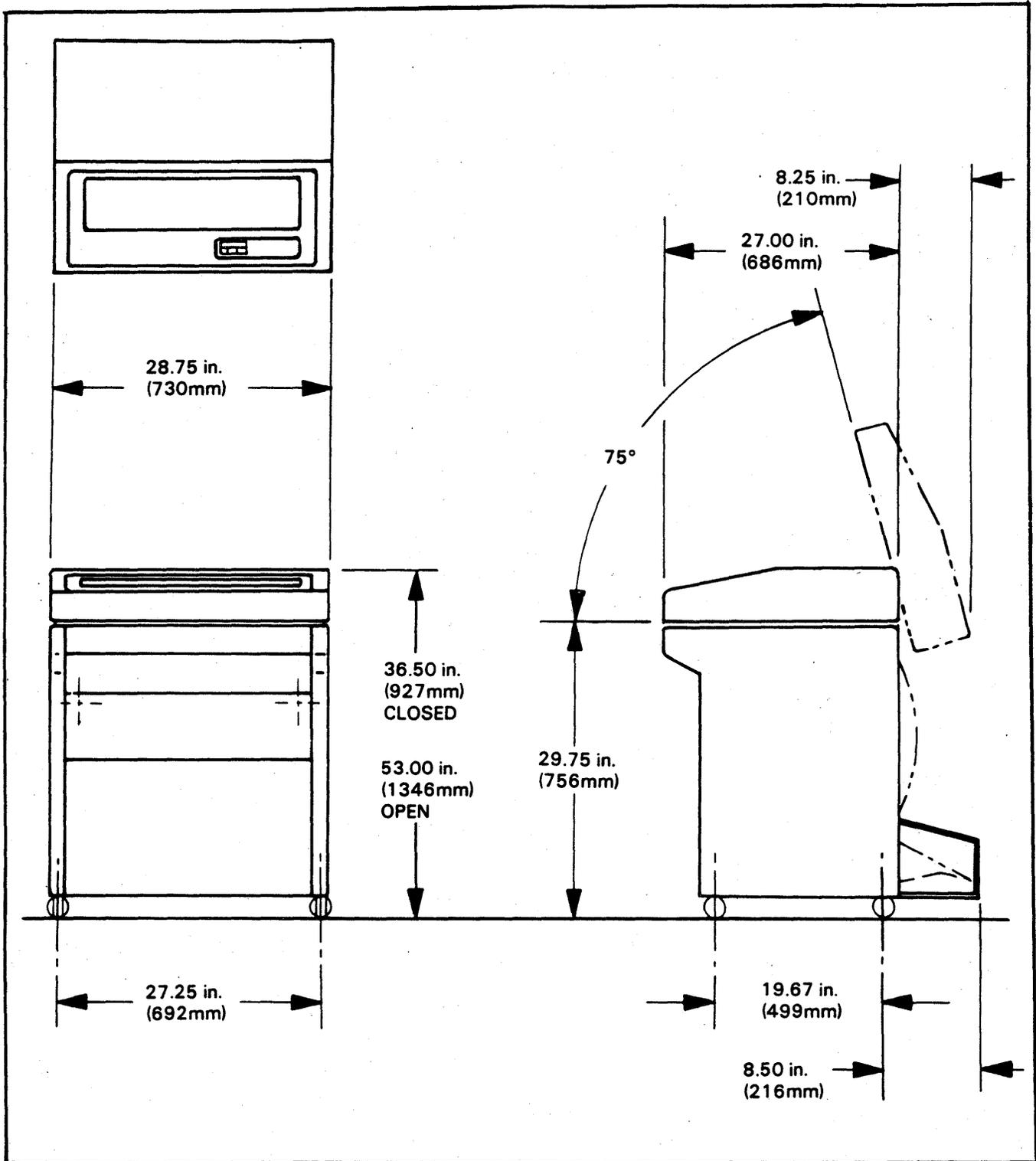


FIGURE 3-1. SERVICE ACCESS SPECIFICATIONS (WITHOUT FRONT DOORS)

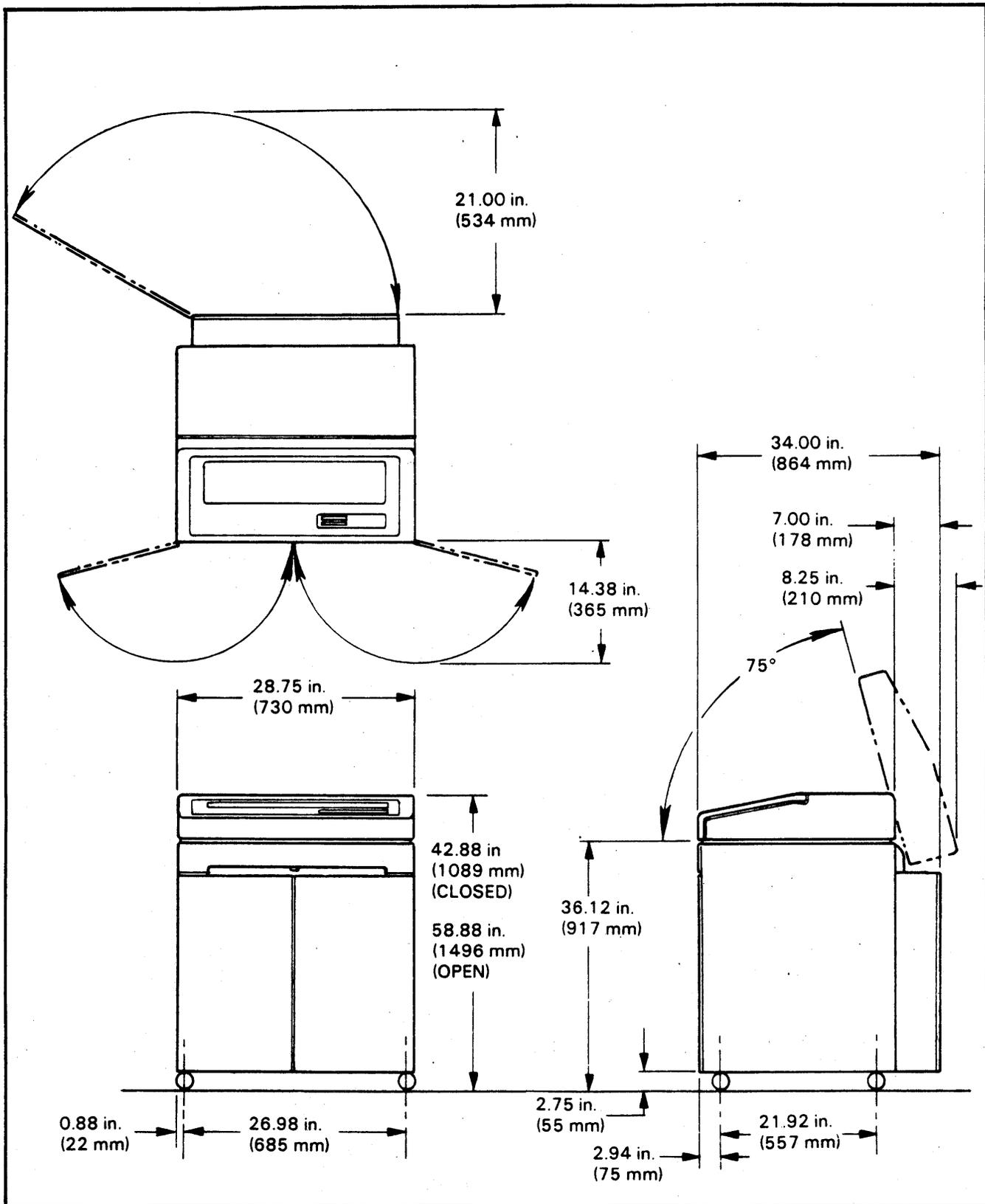


FIGURE 3-2. SERVICE ACCESS SPECIFICATIONS (WITH FRONT DOORS)

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) Minimum -4°C (25°F)
Restrictions	
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.

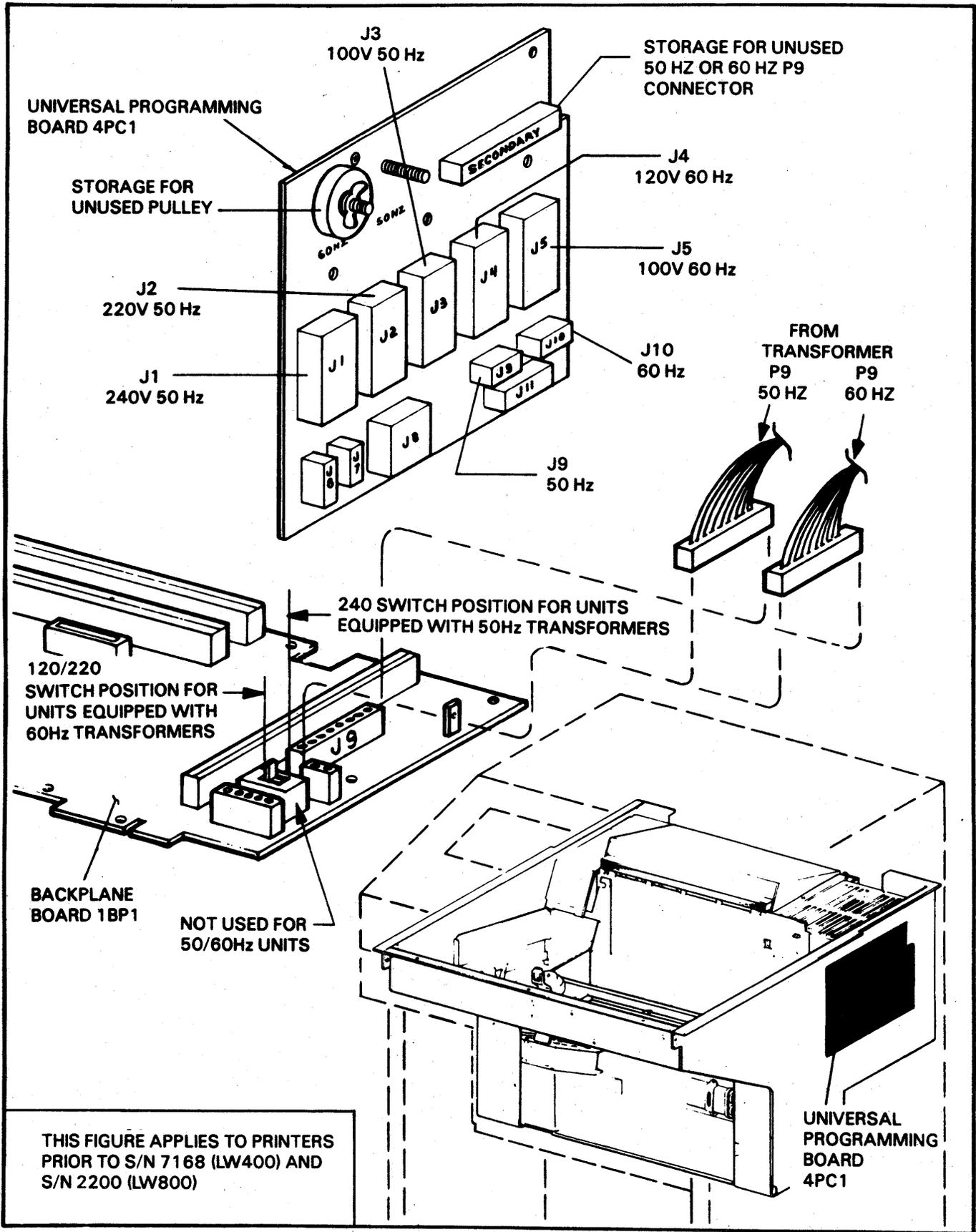
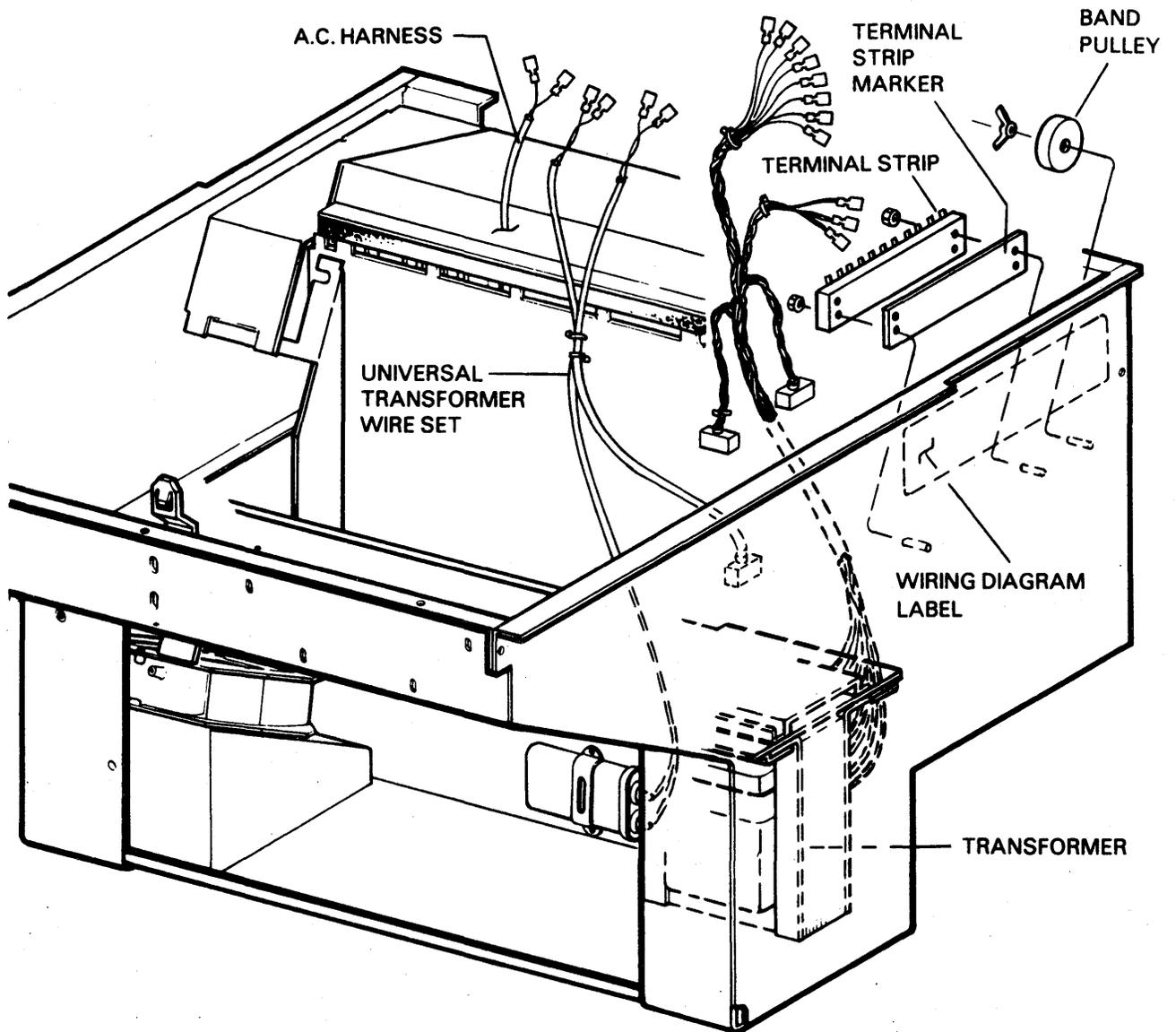
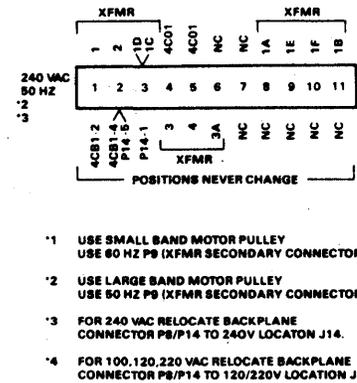
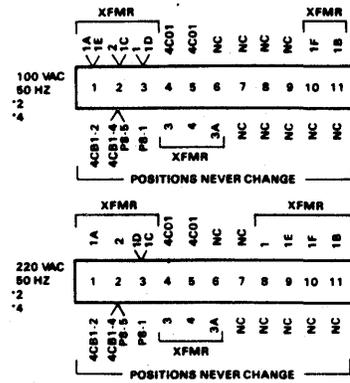
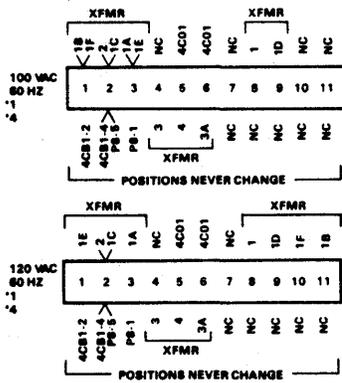


FIGURE 4-1. INPUT POWER/FREQUENCY MODIFICATIONS (EARLY UNITS)

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



A.C. VOLTAGE OPTIONS WIRING DIAGRAM



- *1 USE SMALL BAND MOTOR PULLEY
USE 80 HZ P9 (XFMR SECONDARY CONNECTOR).
- *2 USE LARGE BAND MOTOR PULLEY
USE 50 HZ P9 (XFMR SECONDARY CONNECTOR).
- *3 FOR 240 VAC RELOCATE BACKPLANE
CONNECTOR P8/P14 TO 240V LOCATOR J14.
- *4 FOR 100, 120, 220 VAC RELOCATE BACKPLANE
CONNECTOR P8/P14 TO 120/220V LOCATION J8.

FIGURE 4-2. INPUT POWER/FREQUENCY MODIFICATIONS

4-3/4-4

SECTION V INTERFACE SIGNALS

This section describes the interface signals associated with this interface. Note that RS-449 systems may require special connector adaptors when used in RS-232 installations.

Clear to Send (CTS) (To Printer)

After the host has received the Request to Send from the printer and is capable of accepting a transfer from the printer, it will set the Clear to Send line to space (0) ON and hold it on as long as it is capable of accepting data. The printer may also be programmed to internally set CTS to a constant ON condition.

Data Set Ready (DSR) (To Printer)

Signals in this circuit are used to indicate the status of the local host data set. The mark (1) OFF condition is an indication that the printer is to disregard signals appearing on the Receive Data Line. The space (0) ON condition indicates that the data set is in a ready condition. This signal can be programmed to a constant ON condition at the printer. Any pending status transmission from the printer will be cancelled if this line is OFF.

Data Terminal Ready (DTR) (From Printer)

A signal on this line is generated by the printer's communication interface to indicate that it is capable of receiving data.

Local Loopback (From Printer)

This signal will be activated when the operator selects the local loopback test mode and presses the START switch on the Control Panel. The printer will then monitor the test mode signal (Data Communication Equipment) and when active, it will send a sliding alpha ASCII print pattern followed by a Line Feed (LF) command. The printer will then monitor the Received Data Lines for an exact echo of the transmitted data from the local modem. The operator may select this received data to print if required.

Protective Ground (Between Printer and Host)

This conductor is electrically connected to the equipment frame.

NOTE:

SIGNAL GROUND AND PROTECTIVE GROUND CAN BE TIED TOGETHER IN THE PRINTER OR CAN BE SEPARATED BY REMOVAL OF A 100 OHM RESISTOR.

Receive Common (In RS-449 Mode Only)

This line provides the signal return reference for Incoming Call (IC) and Test Mode (TM) signals coming to the printer from the host. It is connected to each differential receiver's reference pin and is not connected to the printer's common signal ground.

Received Data (To Printer)

Serial data (synchronous or asynchronous) signals on this line are generated by the host. This line is to be held in the OFF (marking) condition at all times when the Received Line Signal Detector (RLSD) line is in the OFF (1) condition.

Received Line Signal (Carrier) Detector (RLSD) (To Printer-Optional)

The ON condition of this optional line indicates that the data communication equipment is receiving a signal which meets its suitability criteria. These criteria are established by the data communication equipment manufacturer.

This signal can be programmed to a constant ON condition at the printer.

Receiver Signal Element Timing (To Printer-Optional)

This signal may be optionally selected to be used by the printer to time its received data when in the synchronous mode.

Remote Loopback (From Printer)

This signal will be activated when the operator selects the remote loopback test mode and presses the START switch on the Control Panel. This operation is similar to the local loopback operation except that the host's remote modem will return the loopback data to the printer.

Request to Send (RTS) (From Printer)

This line is used to indicate that the printer has data to be transmitted to the host.

Reverse Channel (From Printer-Optional)

This signal is ON when the printer interface has not detected the following:

When the interface buffer is nearly full (as set by the selectable threshold points) or Data Terminal Ready is OFF. The reverse channel will be OFF for at least 200 MSEC or until the contents of the buffer have been reduced to below nearly empty (as set by the selectable threshold points). Printer speed may be degraded if data is being removed from the interface buffer at a rate which requires that more data be input (Almost Empty threshold) before the 200 ms time has elapsed. This condition can be avoided by setting the threshold points so that there will be sufficient data in the buffer to keep the printer in operation for at least 200 ms.

NOTES:

THIS SIGNAL MAY BE SWITCH SELECTED TO DRIVE EITHER RS-232C PIN 19 (SCA-SECONDARY REQUEST TO SEND) OR PIN 11 (UNASSIGNED).

IN RS-449 MODES THE SRS (SECONDARY REQUEST TO SEND) LINE WILL BE DRIVEN WHEN THE REVERSE CHANNEL OPTION IS SELECTED AND THE OPTIONAL 9 PIN CONNECTOR IS INSTALLED.

THE ACTIVE POLARITY OF THIS SIGNAL MAY BE SELECTED AS AN OPTION SETUP.

Ring Indicator (To Printer-Optional)

The ON condition indicates that a ringing signal is being received on the communication channel.

Send Common (From Printer) (in RS-449 (i.e. RS-422, 423) Modes Only)

This line provides the signal return reference for the Remote Loopback (RL), the Local Loopback (LL) and the Secondary Request to Send (SRS) signals sent to the host from the printer. It is not to be connected to the host's common signal ground.

Signal Ground (Between Printer and Host)

This signal provides the signal reference point for both received and transmitted signals. It is a signal return line only when in the RS-232C mode. It is not the system's protective or frame ground.

Test Mode (To Printer)

This signal is used to respond to either the LL or RL signals from the printer. It indicates that the host system will return any data from the printer back to the printer. The printer will then begin the test. In RS-232 Mode, this line may be jumpered to be held active internally.

Transmitted Data (From Printer)

This serial data (synchronous or asynchronous) line is sent from the printer to the host to send printer status and response data.

Transmitter Signal Element Timing (From Printer-Optional)

This printer supplied signal may be optionally selected to be used by the host to transmit data to the printer when in the synchronous mode. The frequency of this signal is determined by the printer baud rate select circuitry at times one (x 1).

Transmitter Signal Element Timing (To Printer-Optional)

This signal may be optionally selected to be used by the printer to time its transmitted data, when in the synchronous mode.

CONN. PINS	RS-232 SIGNAL	CIRCUIT DIRECTIONS	EIA
5	CLEAR TO SEND	FROM DCE	CB
6	DATA SET READY	FROM DCE	CC
20	DATA TERMINAL READY	TO DCE	CD
18	LOCAL LOOPBACK	TO DCE	
1	PROTECTIVE GND	-	AA
3	RECEIVED DATA	FROM DCE	BB
8	RECEIVED LINE SIGNAL DETECTOR	FROM DCE	CF
17	RECEIVER SIGNAL ELEMENT TIMING	FROM DCE	DD
4	REQUEST TO SEND	TO DCE	CA
11/19	SECONDARY REQUEST TO SEND OR REVERSE CHANNEL	TO DCE	SCA
7	SIGNAL GND	-	AB
22	RING INDICATOR	FROM DCE	CE
25	TEST MODE	FROM DCE	
2	TRANSMITTED DATA	TO DCE	BA
15	TRANSMITTER SIGNAL ELEMENT TIMING (DCE SOURCE)	FROM DCE	DB
24	TRANSMITTER SIGNAL ELEMENT TIMING (DTE SOURCE)	TO DCE	DA

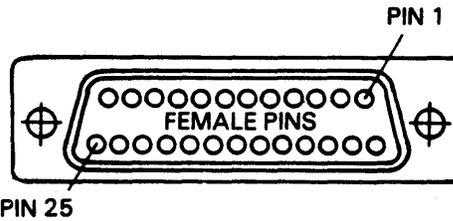
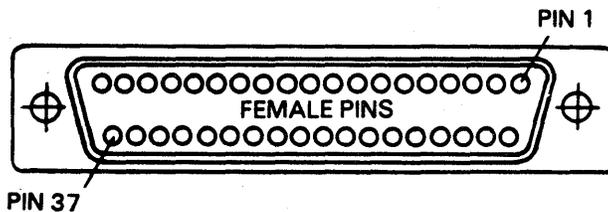


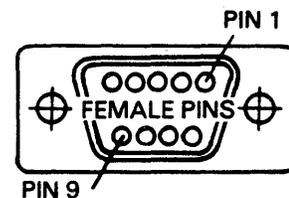
FIGURE 5-1. I/O SIGNALS AND PIN ASSIGNMENTS – RS-232 CONNECTOR

CONNECTOR PINS	RS-449 SIGNAL	CIRCUIT DIRECTIONS	EIA
A	B		
9	27	CLEAR TO SEND	CS
11	29	DATA MODE	DM
15	20	INCOMING CALL	IC
10	37	LOCAL LOOPBACK	LL
20	-	RECEIVE COMMON	RC
8	26	RECEIVE TIMING	RT
6	24	RECEIVED DATA	RD
13	31	RECEIVER READY	RR
14	37	REMOTE LOOPBACK	RL
7	25	REQUEST TO SEND	RS
7*	9*	SECONDARY REQUEST TO SEND	SRS
37	-	SEND COMMON	SC
4	22	SEND DATA	SD
5	23	SEND TIMING	ST
1	-	SHIELD	-
19	-	SIGNAL GROUND	SG
12	30	TERMINAL READY	TR
17	35	TERMINAL TIMING	TT
18	20	TEST MODE	TM

*IN OPTIONAL 9 PIN CONNECTOR



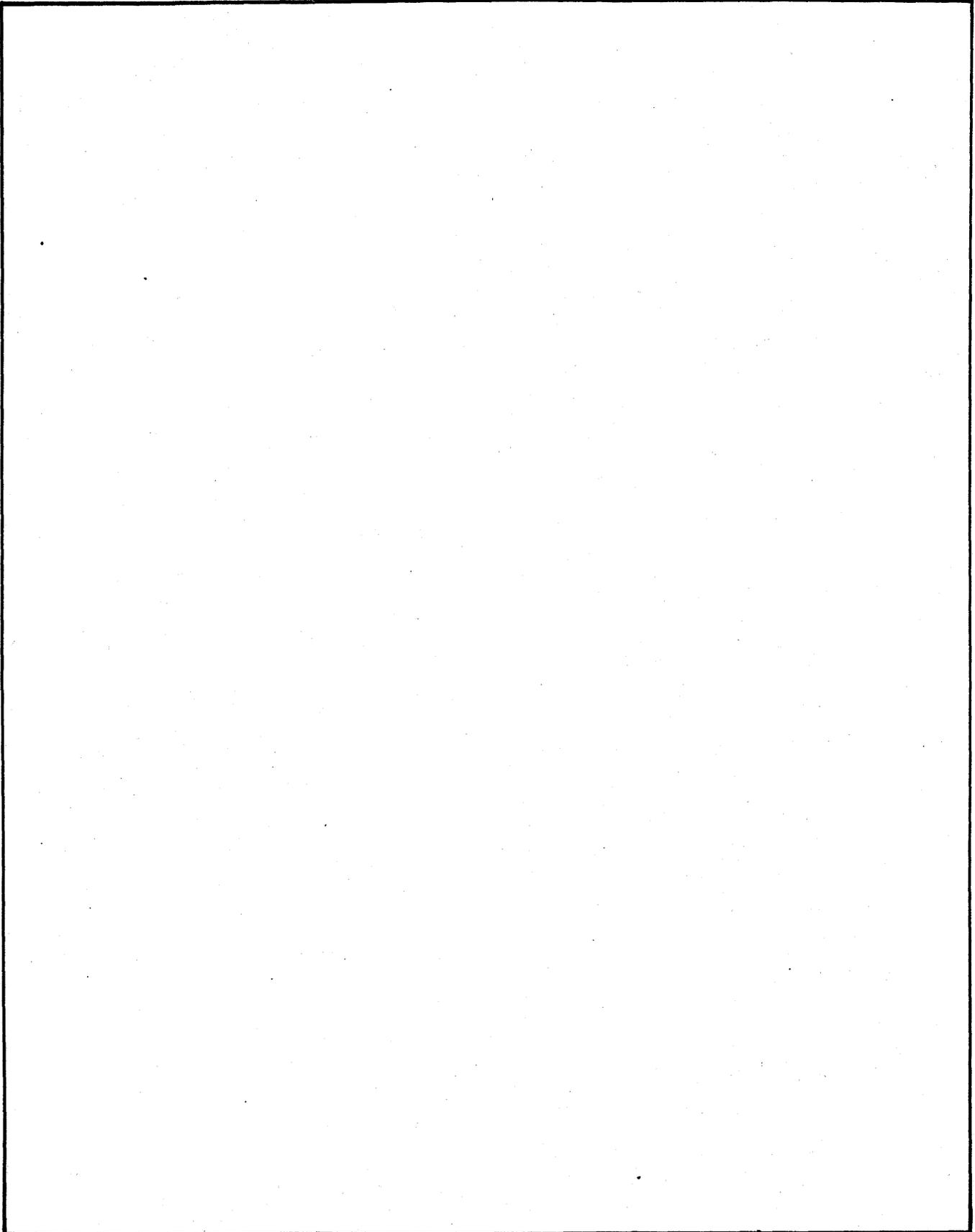
37 PIN "D" TYPE CONNECTOR



OPTIONAL 9 PIN "D" TYPE CONNECTOR

FIGURE 5-2. I/O SIGNALS AND PIN ASSIGNMENTS – RS-449 CONNECTOR

NOTES



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