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# SERIAL PRINTER PRODUCT LINE

# ROSY 26

A78120758

"WARNING: THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE INTERFERENCE TO RADIO COMMUNICATIONS. AS TEMPORARILY PERMITTED BY REGULATION IT HAS NOT BEEN TESTED FOR COMPLIANCE WITH THE LIMITS FOR CLASS A COMPUTING DEVICES PURSUANT TO SUBPART J OF PART 15 OF FCC RULES, WHICH ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST SUCH INTERFERENCE. 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 MEASURE MAY BE REQUIRED TO CORRECT THE INTERFERENCE".

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PDD ROSY 26.1 (A78120758 REV CA)

"ERRATA CORRIAGE" FOR SWITCHES SETTING

| | ERRATA | CORRIGE |
|---|---|---|
| - pag. 52 | S01-31 MUST BE ON | S01-31 MUST BE OFF |
| - pag. 52 | S01-32 MUST BE OFF | S01-32 MUST BE ON |
| - pag. 50 | All the switches (S01-01/02 03/04) MUST BE ON | Switches S01-01/02/04 MUST BE OFF<br>Switch S01-03 MUST BE ON |

S.P.P.L.

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# PRODUCT DESIGN DESCRIPTION

## 1200 BPS

## TELEPRINTER ROSY 26.1

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| CA | ZPGØ810020 | 81-02-02 | Colombo | ALL SHEET |

# CONTENTS

# SECTION X - OPTIONS

# SECTION I - INTRODUCTION

## 1.1. SCOPE OF DOCUMENT

This document describes the Engineering Product Specs of the 1200 bps teleprinter (ROSY 26.1).

## 1.2. SCOPE OF PRODUCT

The basic product is a Receive Only Teleprinter which provides the capability of printing in monodirectional mode at 160 CPS with a 7x7 Matrix scheme. The interface is a serial EIA RS232/C compatible interface which operates in asynchronous mode at 1200 BPS with TTY like procedures.
The teleprinter provides:

- UP to 132 print columns
- Paper handling of the Tractor Type
- Upper case ASCII character set

## 1.3. REFERENCE DOCUMENTS

1.3.1. A78116572 EPS MINA Mechanism

1.3.2. EIA RS232/C Standard

1.3.3. A78120093 EPS Connectability list

1.3.4. ECMA Standard on "Continuous sprocket punched atationary"

1.3.5. A78120407 EPS Character Set Option

1.3.6. A78120406 EPS Keyboard Option

1.3.7. A78129506 EPS MARA Mechanism

# SECTION II - ARCHITECTURE

## 2. 1. OVERVIEW OF THE UNIT

The 1200 BPS Teleprinter (ROSY 26. 1. ) is composed of the following parts

- Mechanism comprehensive of electromechanical parts
- Logic and analysis electronics
- Firmware
- Power supply
- Operator panel
- Desk top enclosure with antinoise cover.

Several options can be added to the basic product, such as keyboard, single sheet movement, etc: they are separately described.

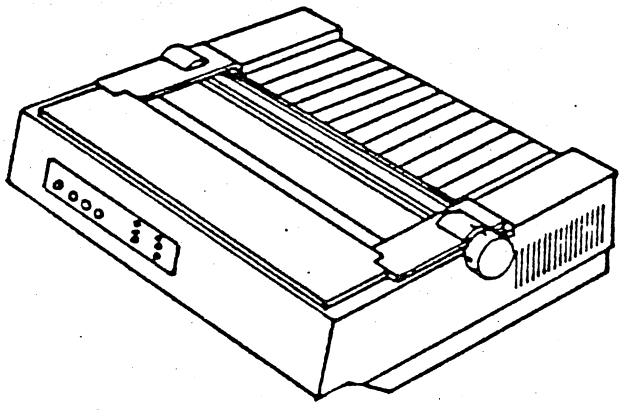
In the printer, a base carries the mechanical parts (basic paper movement by tractor, carriage and its guides, printing head) with their electromechanicam elements (motors, transducers). On the back of the mechanism are carried the power supply and capacitors.
Two electronic boards are positioned above the power supply, providing the power commands for the electromechanical parts (DRIVE board) and the logic for the management of interface signals and of the printer itself (CPU board); this board contains alsc RAM memory and ROM memory.

Space is provided for the connection of two other half size boards, for the management of some options.
A certain number of switches are provided on the CPU board in order to allow the choice at field level among some functionalities or to provide the management of options which require also the addition of mechanical or electronic parts.
A connector or provided for a modem interface.

An operator panel is provided in front of the printer with push buttons and lights able to allow the basic operations on the printer in any condition.

Space is also provided in front of the printer to carry a keyboard, which can be optionally added.

Printing is accomplished by means of a 7 needles impact printing head.
Characters are obtained by dots chosen among those of a 7x7 matrix: the nominal distance between the dots on a vertcal line is 0.37mm and on a horizontal line is 0.5mm. The same needle cannot be operated more than 4 times per character.
Printing is performed only during forward movement of the carriage carrying the printing head.



## 2.2. COMMON PART

### 2.2.1. MECHANICS

#### 2.2.1.1. General

The SPPL mechanics, shown in the following figures, can be considered as self-standing products which presents analogical interface comprised in only 4 connectors: J02-J07-J08-J09.
The two types of mechanics know as MINA (see fig. 2.2.1.1A.) and MARA20 (see fig. 2.2.1.1B.).

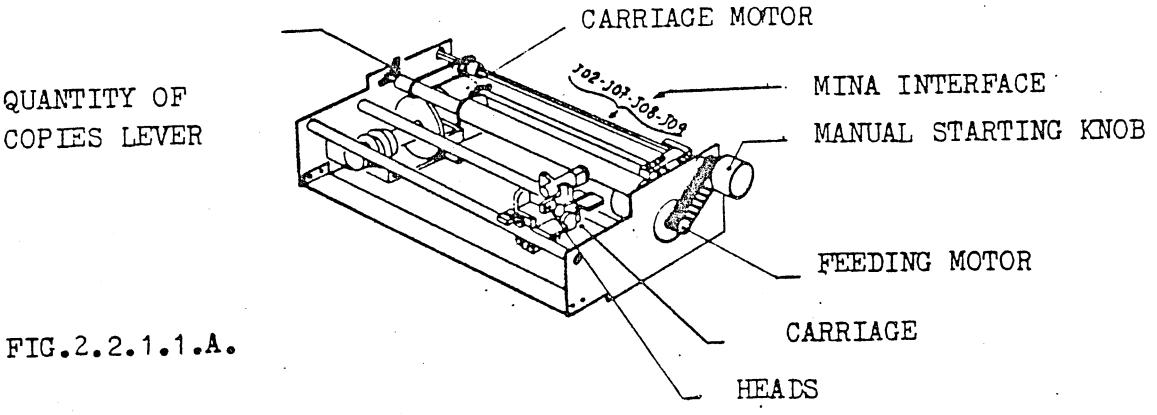
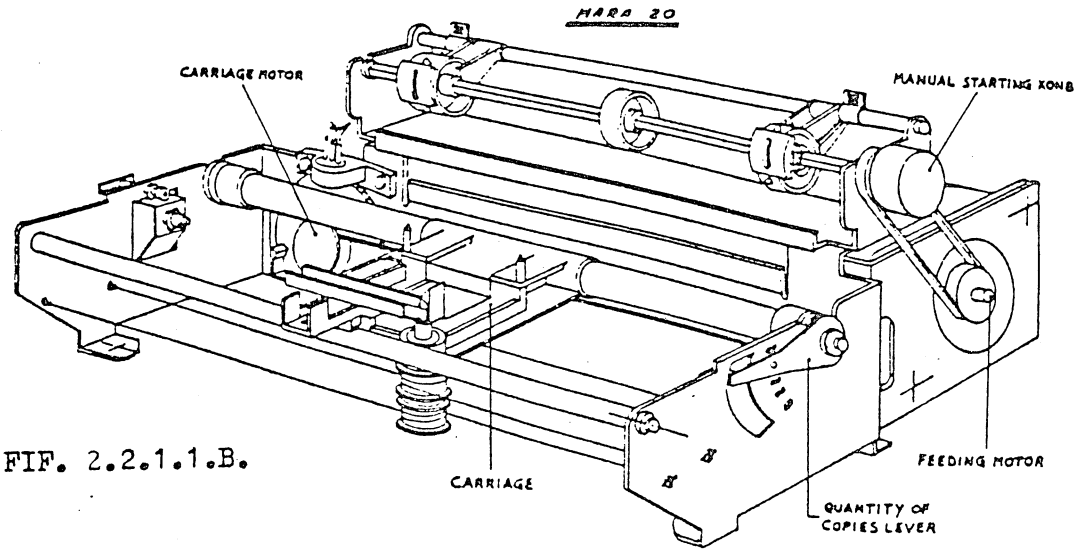



FIG.2.2.1.1.A.




FIF. 2.2.1.1.B.

## 2.2.1.2. Characteristics

| | | |
|---|---|---|
| Print positions | : | max 132 columns |
| Print speed | : | 38/120 characters/sec. according to the option |
| Paper transport speed | : | Line Feed min. 60, max 70 ms. skip 7 inch/sec (46 line feed/sec.). |
| Carriage speed | : | horizontal tabulation $<$ 20 columns at Print speed<br>horizontal tabulation $\geq$ 20 columns at 500 c. p. s.<br>carriage return from column 132, 380 ÷ 430 ms<br>carriage return from column 80, 280 ÷ 310 ms |
| Horizontal spacing | : | 10 characters/inch |
| Vertical spacing | : | 6 lines/inch |
| Usable paper width | : | fanfold = minimum 4, max 15 inches (edge to edge) |
| Usable paper height | : | fanfold = minimum 3, max 21 inches |
| Usable paper type | : | Carrol type with a maximum of 5 copies and weight) variable according to the quantity of copies |
| Usable paper weight | : | 1 copy + 1-3 copies + carbon copy: 55 - 80 gr. square m. / 45 - 75 gr. square m. / 35 gr. square m. /max |
| | | 1 original + 4 copies + carbon copy: 45 gr. square m/max / 35 gr. square m/max |
| Inked ribbon | : | typewriter ribbon contained in a cartridge |
| Color of ribbon | : | black |
| Environment conditions | : | temperature 10-38°C (max variation 11°C/hr)<br>humidity 10-90% RH<br>pressure 562-780 mm/Hg |
| | | These values are normally (standard ECMA) limited by the media specifications (paper + ribbon): |
| | | Temperature 16 - 24°C<br>Humidity 40 - 60% RH |

2.2.1.3. Description

Print and paper movements are performed through three basic functions which are integrated and driven by a common electronics providing their synchronization:

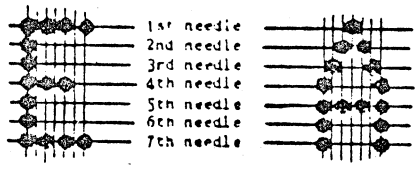
- Carriage assembly
- Head assembly
- Paper feeding assembly

2.2.1.4. Carriage Assembly

The carriage assembly is movable, by two bearing along two horizontal bars.
The longitudinal movement (in both directions) is performed by a teoothed belt which receives its movement by a step motor (step by step). The correct position of the print columns (and consequently the shooting logic of the head needles) is defined by a teoothed wheel coaxial to the step motor and by a mistror transmitting a pulse for each column to the logic.
A beginning-of-run switch provides, at initialization time, the correct position of the carriage which must be aligned with the first print column.
The carriage assembly, comprises the inked ribbon assembly, consisting of two clutches, two plastic wires and a plastic cartridge containing an endless loop of ribbon. The motion of the ribbon is obtained directly from the carriage motion.

2.2.1.5. Head Assembly

The printing head is mounted on the carriage.
It is formed of 7 vertical needles shooted by a electromagnets.
The needle firing during the movement of the carriage, provides the definition of the character which results formed of a set of adjacent points on a 7 x 7 matrix.




Sample of character composition

If the SPPL does not receive a print command within 800 msec, the head automatically shifts of three forward position to permit a good visibility of the printed characters. Upon reception of the next print command, the head repositions correctly.
This function, known as "visibility", is also performed after each carriage return to allow the view all the entire print line. In this case, the head shifts of three positions to the left.

2.2.1.6. Paper feeding assembly

Consist of a stepping motor (of the same type of the one used on the carriage), drive pulley, timing belt and two tractors.
The function is provided by the logic that stores and handles the number of the motor steps (12 steps for 1/6").
According to the number of copies, it is necessary to set in the correct position the paper thickness level (located on the lefts side of the mechanism for the MINA and on the right side for the MARA).
An "end of paper sensor" causes the printer to enter in a fault status. The sensor is located at a distance of 1.5" from the printing line.
Both the tractors are adjustable.
Proper manual paper adjustement can be obtained by means of the knob on the right side of the unit.

# SECTION III - FUNCTIONAL REQUIREMENTS

## 3.1. HARDWARE AND FIRMWARE FUNCTIONS

The unit provides the following functions.
Basic functions

- printing character by character or continuously
- character set printing
- horizontal tabulation
- paper motion control
- character visibility
- three unit status LOCAL - STAND BY - ON LINE

Field selectable functions

- Ready or Stand by status at Power ON
- print of a diamond on parity error detected in modem interface
- half or full duplex
- types of keyboard
- Local print of data when echoplex function is not performed on the system
- management of AFF, SFU, VFU options
- vertical tabulation enabling
- management of upper and lower case character set
- 132 or 80 columns

### 3. 1. 1. PRINTABLE CHARACTER SET

The basic unit can provide national and international upper and upper plus lower case character sets according to what specified in the document at ref. 1. 3. 5.

The DEL code is always ignored.

### 3. 1. 2. MODE OF OPERATION

The device provides a buffer of 1000 characters to eliminate in some case the need of fill characters; in fact the characters coming from the interface will be loaded into the buffer every time the mechanism could not accept a print command.
All characters coming from the line with buffer overflow will be lost.

Two modes of operation will be provided:

- LOCAL mode
- ON LINE mode

.. LOCAL mode : The "Data terminal ready signal" on the interface is in OFF condition.

.. ON LINE mode : The "Data terminal ready" signal is held up on the interface. Data are accepted and printed if no transmission errors are detected.

See para 4. 2. 2. for detailed description.

### 3. 1. 3. HORIZONTAL TABS HANDLING

The sequence to load TABS for horizontal tabulation is:

. the device must be in ON LINE or LOCAL status
. send the clear horizontal TAB command (ESC-2)
. send a message with the CR command at the beginning and then a sequence of SPACE (BLANK) characters with tab set commands (ESC-1) inside.

Up to 16 tabs are available.

A CR command causes the print head to move :

. to the left most tab if tabs are present
. to the left most printable position of the fanfold if no tab is present.

### 3. 1. 4. VERTICAL TABS HANDLING

1. the device must be in ON LINE or LOCAL status.
2. send the clear vertical tab command (ESC-4)
3. send the FF (Form Feed) command to reset the line counter
4. align the first line of fanfold paper under the print head
5. set the tab sending a sequence of LF commands with inside tab set command (ESC-3); after the last tab set command insert a FF (Form Feed) command for the fanfold.
6. up to 10 tabs are available.

### 3. 1. 5. PAGE LENGTH HANDLING

The sequence to load the page length is:

. the device must be in ON LINE or LOCAL status.
. send the FF (Form feed) command to reset the line counter.
. align the first line of fanfold paper under the print head.
. send the page length command (ESC 0 + X) or (ESC ⅋ + Y ).

The binary value of X or Y character determines the number of lines according to the table of para 4. 4. 4.

## 3. 2. ACCEPTED CONTROL CODES

The following table resume the ASCII codes that are accepted by the unit.

| 6 5 4 / 3 2 1 0 | 0 0 0 | 0 0 1 |
|---|---|---|
| 0 0 0 0 | NUL | DLE |
| 0 0 0 1 | SOH | DC1 |
| 0 0 1 0 | STX | DC2 |
| 0 0 1 1 | ETX | DC3 |
| 0 1 0 0 | EOT | DC4 |
| 0 1 0 1 | ENQ | NAK |
| 0 1 1 0 | ACK | SYN |
| 0 1 1 1 | BEL | ETB |
| 1 0 0 0 | BS | CAN |
| 1 0 0 1 | HT | EM |
| 1 0 1 0 | LF | SUB |
| 1 0 1 1 | VT | ESC |
| 1 1 0 0 | FF | FS |
| 1 1 0 1 | CR | GS |
| 1 1 1 0 | SO | RS |
| 1 1 1 1 | SI | US |

ignored in reception

accepted according sequence

For signal definitions, see para. 4. 3. 2.

All the codes, except NUL, are usable for Form Length setting with the sequence ESC 0 + X.

# SECTION IV - INTERFACE PROCEDURE

## 4. 1. USER INTERFACES

### 4. 1. 1. OPERATOR PANEL

#### 4. 1. 1. 1. CONTROLS

Referring to figure 4. 1. 1. 1. the following push buttons are available:

I ON LINE/STAND BY/STAND BY/⌈P

- its pressing causes the printer to:
  - .. go to STAND-BY being in ON-LINE
  - .. go to ON-LINE being in STAND-BY
  - .. go to STAND-BY being in LOCAL not during test
  - .. start the printing during local test operation if pressed after IV push button.

II LOCAL/FORM FEED/FORM FEED/⌈C

- its pressing causes the printer to:
  - .. go to LOCAL being in STAND-BY
  - .. execute a form feed if the printer is in ON-LINE and after carriage is entered in visibility status
  - .. execute a form feed being in LOCAL not during test and after carriage is entered in visibility status
  - .. start the carriage movement without printing during local test operation if pressed after IV push button.

III LINE FEED/LINE FEED

- its pressing causes the printer to:
  - .. execute a line feed being in ON-LINE and after carriage is entered in visibility status
  - .. execute a line feed being in LOCAL not during test and after carriage is entered in visibility status

This push button in meaningless in STAND-BY.

IV BREAK/TEST

- its pressing causes the printer to:
  - .. send a BREAK on the external interface ( 200 ms)
  - .. enter TEST condition being in LOCAL (see Fig. 4.1.1.3.). The start of tests is given by pressing I or II push button.
  - .. stop the test if printer is in LOCAL and test is running.

This push button is meaningless in STAND BY.

The following figure 4.1.1.1. shows the operator panel.

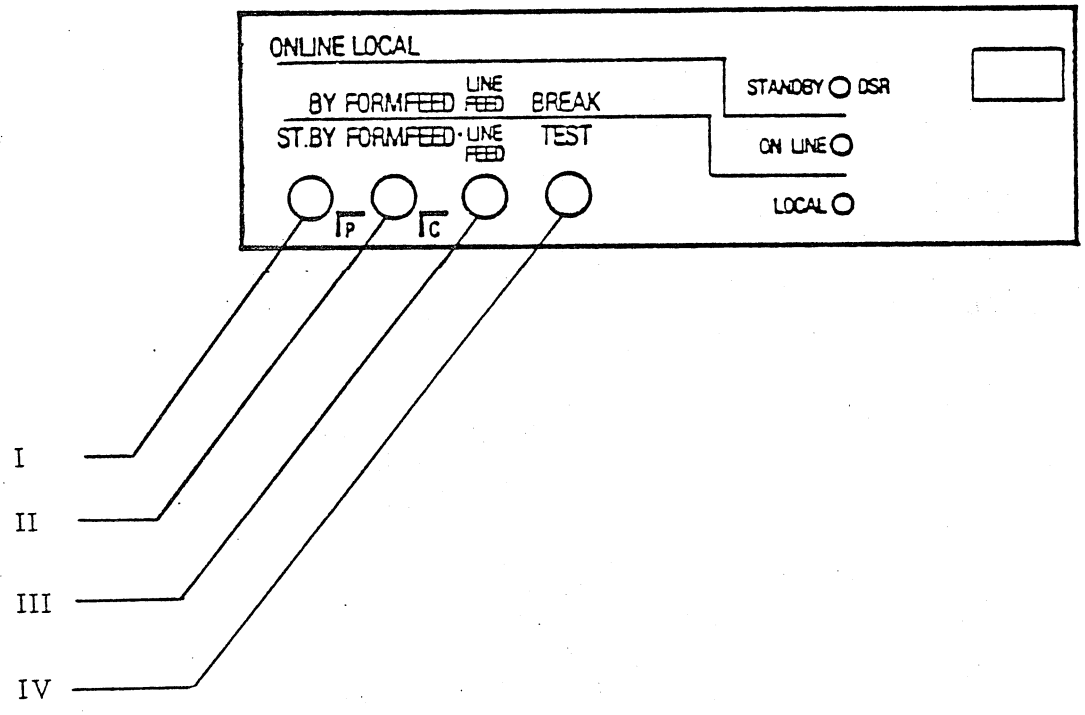



FIG. 4.1.1.1.

4.1.1.2. INDICATORS

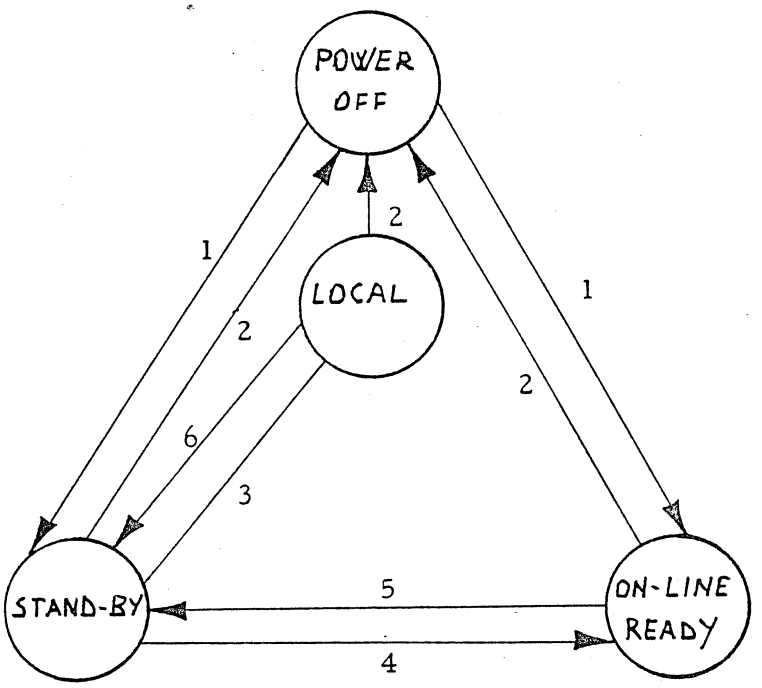
Front panel provides the following lights:

- STAND-BY/DSR (DATA SET READY): indicates that the terminal is in:
  - .. STAND-BY status if ON LINE lamp is OFF
  - .. DSR (DATA SET READY) interface signal ON if ON LINE lamp is ON

- ON LINE : indicates that the terminal is able to correctly operate.
  If at the same time the STAND-BY/DSR (Data Set Ready) lamp lits this means that DSR is ON and the terminal is connected to the communication line.

- LOCAL : indicates that the terminal is powered-up and not connected to the line (Data Terminal Ready OFF)

4. 1. 2. STATUS AND STATUS TRANSITIONS




1 Power ON switch (resulting status depending upon a switch position).

2 Power OFF switch + Printing Fault + Carriage driver voltage fault.

3 LOCAL/FORM FEED push button.

4 Calling indicator signal + ON LINE/STAND BY push button and DSR + ESC H.

5 DSR OFF + Paper End + Carriage Error + ON LINE/STAND BY push button + ESC J + DLE EOT.

6 ON LINE/STAND BY push button + Paper End + Carriage Error.

4. 1. 3. ADDITIONAL OPERATOR PANEL CONTROLS

The following additional controls are provided:

- Lever to accomodate various forms thickness according to the table in para 6. 3. 6.

- Paper Movement Knob which allows to manually position the fanfold paper. This operation possible only in STAND-BY or Power off status.

- Unlock to allow the adjustement of the tractors position.

4. 1. 4. PWA STREPPING

Switches mounted on the printed circuit CPU and DRIVE BOARDS as shown in para 8. 2. 2. 3. UNIT CUSTOMIZATION.

## 4. 2. EXTERNAL INTERFACES

### 4. 2. 1. GENERAL

The interface is serial asycnhronous and transmission code follows the ASCII standard (TABLE 4. 2. 1.) with Teletype like control procedure. The character structure is the following:

- 1 Start bit
- 7 Information bits
- 1 Parity bit (even)
- 1 Stop bit

Transmission speeds is 1200 BPS.

A 25 pin, female connector in accordance with EIA RS-232C Standard is provided on the rear of the printer.
Optional cables terminating with a female connector in accordance with the same standard are provided. Maximum standard cable length is 50 feet.

| b7 b6 b5 / BITS | | $0_{0_0}$ | $0_{0_1}$ | $0_{1_0}$ | $0_{1_1}$ | $1_{0_0}$ | $1_{0_1}$ | $1_{1_0}$ | $1_{1_1}$ |
|---|---|---|---|---|---|---|---|---|---|
| b4 | b3 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 0 | 0 | See paragraph 3.2. | | SP | 0 | @ | P | | p |
| 0 | 0 | | | ! | 1 | A | Q | a | q |
| 0 | 0 | | | " | 2 | B | R | b | r |
| 0 | 0 | | | # | 3 | C | S | c | s |
| 0 | 0 | | | $ | 4 | D | T | d | t |
| 0 | 1 | | | % | 5 | E | U | e | u |
| 0 | 1 | | | & | 6 | F | V | f | v |
| 0 | 1 | | | ' | 7 | G | W | g | w |
| 1 | 0 | | | ( | 8 | H | X | h | x |
| 1 | 0 | | | ) | 9 | I | Y | i | y |
| 1 | 0 | | | * | : | J | Z | j | z |
| 1 | 0 | | | + | ; | K | [ | k | } |
| 1 | 1 | | | , | < | L | \ | l | \| |
| 1 | 1 | | | - | = | M | ] | m | { |
| 1 | 1 | | | . | > | N | ^ | n | ~ |
| 1 | 1 | | | / | ? | O | — | o | DEL |

| b1 | b2 | b3 | b4 | COL. / ROW |
|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 0 | 0 | 1 |
| 0 | 1 | 0 | 0 | 2 |
| 1 | 1 | 0 | 0 | 3 |
| 0 | 0 | 1 | 0 | 4 |
| 1 | 0 | 1 | 0 | 5 |
| 0 | 1 | 1 | 0 | 6 |
| 1 | 1 | 1 | 0 | 7 |
| 0 | 0 | 0 | 1 | 8 |
| 1 | 0 | 0 | 1 | 9 |
| 0 | 1 | 0 | 1 | 10 |
| 1 | 1 | 0 | 1 | 11 |
| 0 | 0 | 1 | 1 | 12 |
| 1 | 0 | 1 | 1 | 13 |
| 0 | 1 | 1 | 1 | 14 |
| 1 | 1 | 1 | 1 | 15 |

a diamond ◇ is printed as described in case of parity error (see para. 4.1.4.)

TABLE 4.2.1.

International ASCII codes

## 4.2.2. INTERFACE SIGNALS

Pins are defined on a 25 pin CANNON female connector (MODEM interface)

Pin 1 . Frame Ground

Frame ground and signal ground will be separated.

Pin 2 . Transmitted Data (from printer): this lead carries the serial data generated by the printer as soon as they are generated. Break signal is sent as spacing lasting more than 200ms.

Pin 3 . Received Data (to printer): the terminal accepts on this lead data in asynchronous mode.
Interpretation of received characters is inhibited if Carrier Detector is OFF or if the printer is in LOCAL mode.

Pin 4 . Request to Send (from printer): this signal goes ON or OFF as soon as the device is initialized after a power ON sequence, according to S01-09 switch position.
The following table summarizes the RTS and DTR conditions.

A - For printer predisposed to go READY at POWER ON.

| STATUS | ON LINE READY | LOCAL | STAND-BY (α) | POWER OFF |
|---|---|---|---|---|
| DTR | ON | OFF | ON | OFF |
| RTS | ON | ON | OFF | OFF |

(α) error condition (Paper out/carriage motion error) procures Stand-By plus a Break (200msec) on Transmitted data.

B - For printer predisposed to go STAND-BY at POWER ON.

same as case A, Mode, but - DTR OFF in Stand By status

- no Break sent on Ready ⟶ Stand By transition.

Pin 5 — Clear to Send (to printer): this signal when ON enables to transmit data.

Pin 6 — Data set Ready (to printer): means that the modem is ready

Pin 7 — Signal Ground: this lead is the common ground reference for all interchange circuits, except Frame Ground.

Pin 8 — Carrier Detector (to printer): it enables interpretation of the received characters.

Pin 18 — - 12 Useful to force the signal in false level when they are not used in the connection.

Pin 20 — Data Terminal Ready (from printer): according to switch (S01-09) position on CPU board is possible to have:

1 - : Switch position causes READY status at Power-ON.

DTR ON

- At power-ON
- When ON LINE/ST. BY push button is pressed with printer in Stand-By
- When Calling indicator signal is received
- ESC H, (ESC h) sequences on interface

DTR OFF

- LOCAL

2 - : Switch position causes STAND-BY status at power ON

DTR ON

- When ON LINE/ST. BY push button is pressed
- When Calling indicator signal is received and DSR goes ON before a 250msec min time out.
- ESC H (ESC h) sequence on interface

DTR OFF

- . End of paper signal is present
- . Carriage motion error is present
- . ON LINE/ST.BY push button is pressed
- . DLE EOT sequence is received
- . ESC J (ESC j) sequences on interface
- . When DSR goes low

Pin 21 — +12 Useful to force the signals in true level when they are not used in the connection

Pin 22 — Calling Indicator (to printer): this signal goes ON when a remote call is received.

Pin 11 — Secondary Transmitted Data (from printer). This signal is used only when teleprinter is connected to a Bell 202C Data Set. It is used to send a Break signal lasting more than 200msec while Request to Send (RTS) is OFF.
This brake is obtained by operation on Operator Panel or via keyboard while the printer is receiving.

Pin 14 — Secondary Transmitted Data (from printer). This signal is used only when teleprinter is connected to Data Sets following CCITT and EIA RS232C standards. It is used to send a Break signal lasting more than 200msec while Request to Send (RTS) is OFF.
This brake is obtained by operation on Operator Panel or via keyboard while the printer is receiving.

Pin 13 — Secondary Clear to Send (to printer). This signal when ON enables to transmit the break on the "Secondary Transmitted Data" signal.

Pin 19 — Secondary Request to Send (from printer): this signal is ON every time the "Request to Send" is OFF and viceversa when RTS is ON.

## 4. 3. INTERFACE SIGNAL HANDLING

### 4. 3. 1. AUTOMATIC ANSWER

On switched lines with modems wired for automatic answer, receiving "Calling indicator" the printer will automatically connect the modem on the line so that it will be ready to receive data.

### 4. 3. 2. CODES HANDLING

Reference is made to paragraph 3. 2.

Control codes and code combinations are defined in the following:

- BEL : recognition of this code activates an audible alarm for about 0. 5 seconds
- FS : recognition of this code causes the single sheet ejection when the Automatic Front Feed option is present
- GS : recognition of this code causes the single sheet positioning when the Automatic Front Feed option is present or a line feed when the second paper handler option is present.
- BS : recognition of this code causes the printing head to move one position to the left.
- HT : recognition of this code causes the printing head to move forward to the next tab position. If no TABS have been set, the head moves to the end of the line (80 or 132 position).
- LF : this code causes the paper to advance one list
- VT : this code causes the paper to advance up to the next vertical tab or to one first line of next form when no tab are inserted (when enabled by S01-16 switch) (see para 4. 3. 4. )

- FF : this code causes the paper to advance at the first line of the next form (when enabled by S01-16 switch otherwise it causes a LF) (see para 4.3.4.)

- CR : recognition of this code causes the printing head to move to first tab or to the first print position when no tab are inserted

- DLE : is ignored if not followed by EOT.
In this case it causes the Data Terminal Ready to be turned OFF to cause modem disconnection on switched lines according to switch position (see para 4.1.4. and 4.2.2.).

- ESC : the following escape sequences are interpreted:

  1) ESC1 : sets a tab at the horizontal position where it is recognized.

  2) ESC2 : clears all horizontal tabs. (At power-on all tabs are cleared).

  3) ESC3 : sets a vertical tab position at line count.

  4) ESC4 : clear all vertical tabs

  5) ESC0 : plus X character to determine the page length, max page length is 126 lines. The Teleprinter is initially set for 66 lines (see table para 4.4.4.1. and Appendix A).

  6) ESCH : (ESC h): causes the printer go to ON LINE status from the STAND-BY status. Correspondingly DTR and RTS will go ON.

  7) ESCJ : (or ESC j): causes the printer go to STAND-BY status from the ON LINE status. Correspondingly RTS or RTS + DTR will go OFF.

  8) ESCØY: (ESC + space + Y) (see table 4.4.4.). The binary value of Y minus 32 defines the number of lines of the page.
  E. g. a page length of 66 lines can be set in the following ways:

by line

ESC + Ø + $62_{Hex}$ or (with other sequence) — note $62_{Hex}$ ASCII code corresponds to "b" character.

ESC + 0 + $42_{Hex}$ — note $42_{Hex}$ ASCII code corresponds to "B" character.

by keyboard

ESC + Ø + (key number 51)
or (with other sequence)

note key number 51 corresponds to B on 60SD11 keyboards (NML)

(see Appendix A and B for further information).

Note: This sequence was introduced in order to avoid problems in setting some form lengths under 32 columns due to the use as VIP hard copy in transparent mode (OFF position).

Code sequences ESC0 + CRT, ESC3, ESC4 and ESCf + CRT + CRT can be ignored according to switch S01-14 on CP U board.

- ENQ : this code, valid in full duplex causes the answer of an ACK code if the printer is in READY status; a NACK code is sent if the printer is in STAND-BY status.

Note: A break signal is sent on the "Transmitted data" signal interface (at least 200ms) every time the break key is depressed on the keyboard or on the operator panel, or for paper out/carriage motion error if the switch S02-09 is positioned for READY status at Power-ON.

- ETX : recognition of this code causes the Line turn-around when the printer is setted for helf-duplex operation.

- EOT : same as ETX.

- ACK : same as ETX.

4.3.3. BUFFER OVERFLOW

When the Dip switch S01-19 is in OFF position, the Request To Send (RTS) signal goes low chen characters in the buffer exceed 3/4K (buffer full); the RTS signal returns high when characters in the buffer are less than 512 (buffer empty).

4.3.4. VERTICAL FORM MANAGEMENT CODING

The printer will provide the capability to set tabs to perform vertical tabulation and form length for top of form skip. These information can be given by remote or local (from keyboard if the option is present).
Execution of VT code can be enabled or disabled at field engineer level by switch (see para 4.1.4.).
When VT code is disabled the reception of FF code will cause the execution of LF movement.
The skip is performed by receiving remotely or locally a VT or FF command. If the VT code is entered after the page has been advanced beyond the highest tab set, the paper will advance to the top of next page. Paper synchronization is performed by operator, adjusting the paper by means of a knob.

4.4. PROGRAMMING CONSIDERATIONS

4.4.1. HORIZONTAL TAB PROGRAMMING

4.4.1.1. CR PLUS LF SEQUENCE

The following are the formulas to compute the worst case fill characters after CR/LF:

a - columns from 20 to 132

$$X = \frac{(N-2)\ 6.88 + (N-16)\ 2.5 + 180}{8.33} - N$$

b - columns from 2 to 20

$$X = \frac{(N-2)\ 13.76 + 80}{8.33} - N$$

where : X = number of fill characters
N = number of columns to be printed

The number of fill characters required are the following:

- with 132 columns 32 fill characters
- with 120 columns 31 fill characters
- with 80 columns 26 fill characters
- with 60 columns 23 fill characters
- with 36 columns 20 fill characters

## 4.4.2. CHARACTER VISIBILITY

Due to the buffer no fill characters are required after print head movement is performed to permit the visibility of the last printed character.

## 4.4.3. VERTICAL TABULATION

The number of fill characters required after a LF command received from the line is 7.
The formula to compute the worst case fill characters after a VT or FF or GS commands in the following:

$X = 5 + 2.85$ number of line performed.

4. 4. 4. 1. PAGE LENGTH PROGRAMMING

Two ways are provided: ESC ∮ Y described in para4. 3. 2. item 8 or ESC 0 X (see para 4. 3. 2. ).
The binary values of character X or Y to set the page length are:

| Number of lines | Hexadecimal character | | Number of lines | Hexadecimal character | | Number of lines | Hexadecimal character | |
|---|---|---|---|---|---|---|---|---|
| | X | Y | | X | Y | | X | Y |
| 1 | 01 | 21 | 43 | 2B | 4B | 85 | 55 | 75 |
| 2 | * | 22 | 44 | 2C | 4C | 86 | 56 | 76 |
| 3 | * | 23 | 45 | 2D | 4D | 87 | 57 | 77 |
| 4 | * | 24 | 46 | 2E | 4E | 88 | 58 | 78 |
| 5 | * | 25 | 47 | 2F | 4F | 89 | 59 | 79 |
| 6 | 06 | 26 | 48 | 30 | 50 | 90 | 5A | 7A |
| 7 | 07 | 27 | 49 | 31 | 51 | 91 | 5B | 7B |
| 8 | 08 | 28 | 50 | 32 | 52 | 92 | 5C | 7C |
| 9 | 09 | 29 | 51 | 33 | 53 | 93 | 5D | 7D |
| 10 | 0A | 2A | 52 | 34 | 54 | 94 | 5E | 7E |
| 11 | 0B | 2B | 53 | 35 | 55 | 95 | 5F | 7F |
| 12 | 0C | 2C | 54 | 36 | 56 | 96 | 60 | 80 |
| 13 | 0D | 2D | 55 | 37 | 57 | 97 | 61 | 81 |
| 14 | 0E | 2E | 56 | 38 | 58 | 98 | 62 | 82 |
| 15 | 0F | 2F | 57 | 39 | 59 | 99 | 63 | 83 |
| 16 | * | 30 | 58 | 3A | 5A | 100 | 64 | 84 |
| 17 | 11 | 31 | 59 | 3B | 5B | 101 | 65 | 85 |
| 18 | 12 | 32 | 60 | 3C | 5C | 102 | 66 | 86 |
| 19 | 13 | 33 | 61 | 3D | 5D | 103 | 67 | 87 |
| 20 | 14 | 34 | 62 | 3E | 5E | 104 | 68 | 88 |
| 21 | 15 | 35 | 63 | 3F | 5F | 105 | 69 | 89 |
| 22 | * | 36 | 64 | 40 | 60 | 106 | 6A | 8A |
| 23 | * | 37 | 65 | 41 | 61 | 107 | 6B | 8B |
| 24 | * | 38 | 66 | 42 | 62 | 108 | 6C | 8C |
| 25 | * | 39 | 67 | 43 | 63 | 109 | 6D | 8D |
| 26 | 1A | 3A | 68 | 44 | 64 | 110 | 6E | 8E |
| 27 | * | 3B | 69 | 45 | 65 | 111 | 6F | 8F |
| 28 | 1C | 3C | 70 | 46 | 66 | 112 | 70 | 90 |
| 29 | 1D | 3D | 71 | 47 | 67 | 113 | 71 | 91 |
| 30 | 1E | 3E | 72 | 48 | 68 | 114 | 72 | 92 |
| 31 | 1F | 3F | 73 | 49 | 69 | 115 | 73 | 93 |
| 32 | 20 | 40 | 74 | 4A | 6A | 116 | 74 | 94 |
| 33 | 21 | 41 | 75 | 4B | 6B | 117 | 75 | 95 |
| 34 | 22 | 42 | 76 | 4C | 6C | 118 | 76 | 96 |
| 35 | 23 | 43 | 77 | 4D | 6D | 119 | 77 | 97 |
| 36 | 24 | 44 | 78 | 4E | 6E | 120 | 78 | 98 |
| 37 | 25 | 45 | 79 | 4F | 6F | 121 | 79 | 99 |
| 38 | 26 | 46 | 80 | 50 | 70 | 122 | 7A | 9A |
| 39 | 27 | 47 | 81 | 51 | 71 | 123 | 7B | 9B |
| 40 | 28 | 48 | 82 | 52 | 72 | 124 | 7C | 9C |
| 41 | 29 | 49 | 83 | 53 | 73 | 125 | 7D | 9D |
| 42 | 2A | 4A | 84 | 54 | 74 | 126 | 7E | 9E |

The page length can also be introduced through keyboard or VFU options etc:

the related programming considerations are reported in the documents describing the options and in attachements A and B.

(*) - Not usable in VIP hard copy transparent mode connection.

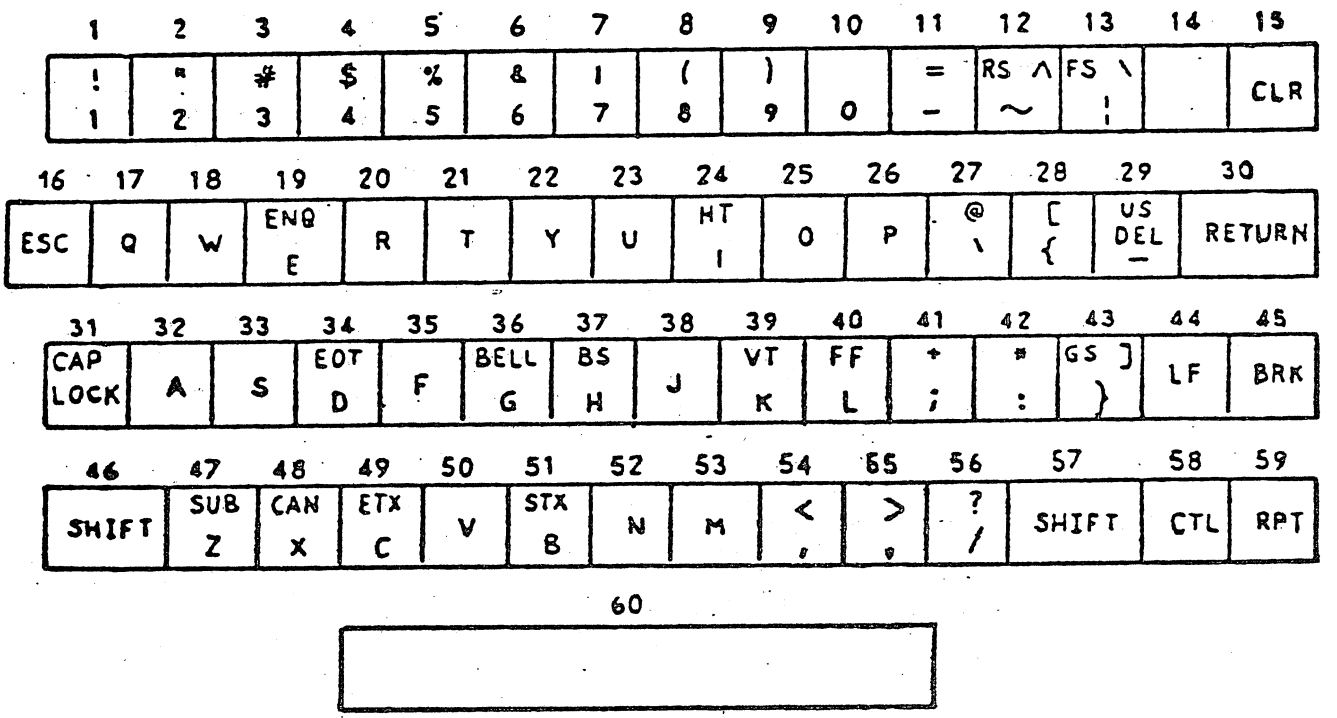



FIGURE 4.4.5.A. ROSY TTY Procedure Keyboard -

## 4. 4. 5. PAGE LENGTH HANDLING BY KEYBOARD

The sequence to load the page length is:

- the device can be either in LOCAL or in ON LINE status.
- give the FF (form feed) command to reset the line counter.
- align the first line of fanfold paper under the print head.
- give the page length command (ESC 0 + X), the binary value of X character determines the number of lines according to the following table:

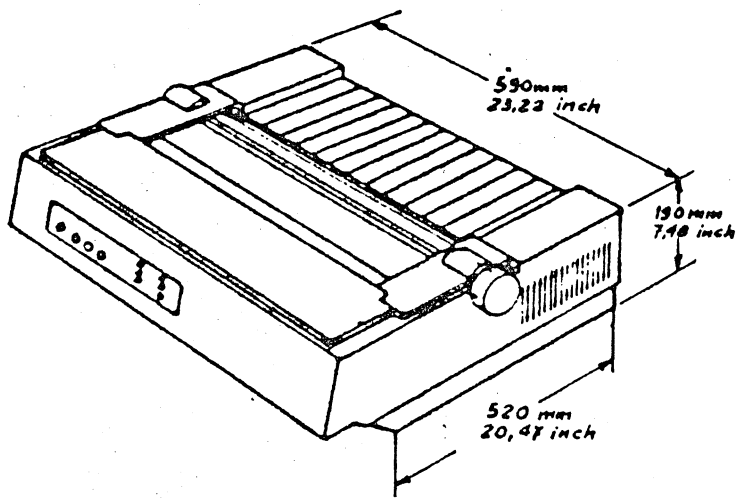
| Number of lines | Key to press | Number of lines | Key to press |
|---|---|---|---|
| 1 | CTL + Key N° 3 | 36 | SHIFT + Key N° 4 |
| 6 | " " " 35 | 37 | " " " 5 |
| 7 | " " " 36 | 38 | " " " 6 |
| 8 | " " " 37 | 39 | " " " 7 |
| 9 | " " " 24 | 40 | " " " 8 |
| 10 | Key N° 44 | 41 | " " " 9 |
| 11 | CTL + Key N° 39 | 42 | " " " 42 |
| 12 | " " " 40 | 43 | " " " 41 |
| 13 | Key N° 30 | 44 | Key N° 54 |
| 14 | CTL + Key N° 52 | 45 | " " 11 |
| 15 | " " 25 | 46 | " " 55 |
| | | 47 | " " 56 |
| 17 | " " 17 | 48 | " " 10 |
| 18 | " " 20 | 49 | " " 1 |
| 19 | " " 33 | 50 | " " 2 |
| 20 | " " 21 | 51 | " " 3 |
| 21 | " " 23 | 52 | " " 4 |
| 26 | " " 47 | 53 | " " 5 |
| 28 | " " 13 | 54 | " " 6 |
| 29 | " " 43 | 55 | " " 7 |
| 30 | " " 12 | 56 | " " 8 |
| 31 | " " 29 | 57 | " " 9 |
| 32 | Key N° 60 | 58 | " " 42 |
| 33 | SHIFT + Key N° 1 | 59 | " " 41 |
| 34 | " " " 2 | 60 | SHIFT + Key N° 54 |
| 35 | " " " 3 | 61 | " " " 11 |

| Number of lines | Key to press |
|---|---|
| 62 | SHIFT + Key N° 55 |
| 63 | " " 56 |
| 64 | " " 27 |
| 65 | LOCK + Key N° 32 |
| 66 | " " " 54 |
| 67 | " " " 49 |
| 68 | " " " 34 |
| 69 | " " " 19 |
| 70 | " " " 35 |
| 71 | " " " 36 |
| 72 | " " " 3 |
| 73 | " " " 24 |
| 74 | " " " 38 |
| 75 | " " " 39 |
| 76 | " " " 40 |
| 77 | " " " 5 |
| 78 | " " " 52 |
| 79 | " " " 25 |
| 80 | " " " 26 |
| 81 | " " " 17 |
| 82 | " " " 20 |
| 83 | " " " 33 |
| 84 | " " " 21 |
| 85 | " " " 23 |
| 86 | " " " 50 |
| 87 | " " " 18 |
| 88 | " " " 48 |
| 89 | " " " 22 |
| 90 | " " " 47 |
| 91 | SHIFT + Key N° 28 |
| 92 | " " " 1 |
| 93 | " " " 4 |
| 94 | " " " 12 |
| 95 | Key N° 29 |
| 96 | " " 27 |
| 97 | " " 32 |
| 98 | " " 51 |
| 99 | " " 49 |
| 100 | " " 34 |

| Number of lines | Key to press |
|---|---|
| 101 | Key N° 19 |
| 102 | " " 35 |
| 103 | " " 36 |
| 104 | " " 37 |
| 105 | " " 24 |
| 106 | " " 38 |
| 107 | " " 39 |
| 108 | " " 40 |
| 109 | " " 53 |
| 110 | " " 52 |
| 111 | " " 25 |
| 112 | " " 26 |
| 113 | " " 17 |
| 114 | " " 20 |
| 115 | " " 33 |
| 116 | " " 21 |
| 117 | " " 23 |
| 118 | " " 50 |
| 119 | " " 18 |
| 120 | " " 48 |
| 121 | " " 22 |
| 122 | " " 47 |
| 123 | " " 28 |
| 124 | " " 13 |
| 125 | " " 43 |
| 126 | " " 12 |

# SECTION V - PHYSICAL AND LOGICAL STRUCTURE

## 5. 1. PHYSICAL STRUCTURE




### 5. 1. 1. MECHANICAL SPECS

| | | |
|---|---|---|
| Height | 7, 5" | (190 mm) |
| Width | 23" | (590 mm) |
| Depth | 20, 5" | (520 mm) |
| Weight | 64 Lbs | (28, 5 Kg) |

Desk top cabinet, including mechanism, electronics, power supply.

### 5. 1. 2. ENVIRONMENTAL CONDITIONS

The operating environment is:

- Temperature range 10°C to 38°C (Dry Build)
- Humidity range 10% RH to 90% RH

Media restrictions (see ECMA standard paral. 3. 4.) are:

- Temperature range 16°C to 24°C
- Humidity range 40% RH to 60% RH

Outside of these restrictions, some degradation can be expected.

## 5.1.3. ELECTRICAL SPECS

### 5.1.3.1. PRIMARY POWER

The unit will operate as specified when connected to any of following source of primary power

- 208 Vac; 60 Hz; monophase: three wires (1 phase, 1 ground, 1 neutral)
- 220 Vac; 50 Hz; monophase: three wires (1 phase, 1 ground, 1 neutral)
- 120 Vac; 60 Hz; monophase: three wires (1 phase, 1 ground, 1 neutral)

A. C. power consumption is 230 VAmax

All the voltages have tolerances + 10%, - 15%.

Selection of the mains is at field engineering level.

The mains is sectionable in order to meet U. L. requirements.

### 5.1.3.2. SIGNALS ELECTRICAL CHARACTERISTICS

The device interface signals are compatible with EIA RS232C and with CCITT V24, standards and are described in para 4.2.2. The signals electrical value is:

Positive = + 10V
Negative = - 10V.

The accepted signal electrical value is:

Positive : + 3V to + 25V
Negative : - 3V to - 25V.

# SECTION VI - PERFORMANCE

## 6. 1. PRINTER PERFORMANCES

| | |
|---|---|
| Character size | - 1, 9 mm x 2, 67 mm (. 075"x. 105") (outside dimension) |
| Character pitch | - 1/10" |
| Line Spacing | - 1/6" |
| Print Position | - up to 132 |
| Carriage Return Time | - nominal 380ms - max 430ms for 132 col.<br>nominal 280ms - max 310ms for 80 col. |
| Paper feeding | - tractors type |
| Paper width | - fanfold paper minimum 4", maximum 15" wide |
| Line feed time | - max 70 ms |
| Print color | - one print color |
| Print rate | - continuous 160 CPS ± 5% average<br>character by character 38 CPS ± 15% |
| Number of copies | - original plus up to 4 copies |
| Ribbon | - ribbon is of the cartridge type and can be replaced by the operator |
| Vertical tabulation and form feed | - performed at 7 inches/sec (42 lines/sec) |
| Horizontal tabulation | - performed at the following speed:<br>. 160 CPS for displacement up to 20 columns<br>. slew speed for displacement over 20 col. (mac slew speed 500 cps nominal) |

## 6. 2. LINE CHARACTERISTICS

The Teleprinter will be connected to a host system through the EIA RS232C serial interface in two way:

- directly without Modem
- remotely by means of Modem

The connection capabilities are:

- Transmission speed - 1200 BPS
- Data synchronization - asynchronous mode
- Communication channels - point-to-point either Full Duplex or Half Duplex either with or without secondary channel (see para 4. 3. 4. )
  - switches or leased
- Communication code and control procedures - TTY like, intended as follows: ASCII, 7 information bit plus 1 parity bit plus 1 STOP bit.

## 6. 3. CAPACITIES

### 6. 3. 1. PRINT VISIBILITY

The printing head automatically moves 3 position beyond the current print position after about 0.8 seconds time-out of no printing activity.
At the end of the carriage return movement the printing head will be 3 positions on the left of the first print position to permit the complete line visibility even if no line feed is performed.

### 6. 3. 2. END OF PAPER SENSOR

A sensor, is provided to detect that the forms supply is depleted. Upon detection of end of paper condition the device will stop printing, the STAND-BY indicator will be lighted and the signals "Data Terminal Ready" and "Request to Send" will be set as described in para 4. 2. 2.

6. 3. 3. AUTOMATIC NEW LINE

To protect the print head, every time is received a new character to be printed (instead of CR + LF) being the print head on column133 or 81 (depending from the line length selected), the printer will perform automatically a CR plus LF and then will print the received character on first column of the new line.
The line counter is corresponding increased.

6. 3. 4. AUDIBLE ALARM

An audible alarm is activated for about 0. 5 seconds when it has been received a BEL command from the line.

6. 3. 5. MEDIA CHARACTERISTICS

The SPPL handles the standard continuous fanfold paper forms. The continuous fanfolds commonly used in the European and USA countries, have marginal sprocket holes (Carrol type) as specified below:

- Sprocket holes diameters : 5/32" = 3. 97 mm $\pm$ 0. 1
- Sprocket holes pitch : 0. 5" = 12. 7 mm $\pm$ 0. 1
- Distance of any hole from the corresponding one, placed 20 pitches farther, must be equal to 254mm $\pm$ 0. 6.

Fanfold dimensions:

- Form height : from 3 to 21 inches
- Form width : from 4 to 15 inches

Table 6. 3. 5. 1. shows the media weights and the number of copies.

| Number of copies | Type of media | Weight | Carrying method |
|---|---|---|---|
| 1 copy | Fanfold form | min 55 gr/mq<br>max 80 gr/mq | tractors |
| 2 to 4<br>(1 original +<br>1 to 3 copies ) | Fanfold form<br>(carbon not considered) | min 45 gr/mq<br>max 75 gr/mq | tractors |
| | carbon | max 35 gr/mq | |
| 5<br>(1 original +<br>4 copies) | Fanfold form<br>(carbon not considered) | max 45 gr/mq | tractors |
| | carbon | max 35 gr/mq | |

Tab. 6. 3. 5. 1. Media characteristics

## 6. 3. 6. PAPER THICKNESS ADJUSTEMENT

A lever is provided to accomodate various form thickness according to the following table.

| MEDIA THICKNESS | LEVER POSITION |
|---|---|
| .07 ÷ 0.12 mm<br>(.003" to .0047") | 1 |
| 0.13 ÷ 0.22 mm<br>(.0051" to .0087") | 2 |
| 0.23 ÷ 0.32 mm<br>(.0091" to .0126") | 3 |
| 0.33 ÷ 0.42 mm<br>(.0130" to .0165") | 4 |
| 0.43 ÷ 0.52 mm<br>(.0169" to 0.0204") | 5 |

## 6. 3. 7. PRINT ALIGNEMENTS

. Line straightness

The maximum deviation between any individual characters of the same line is 0.15mm (0.006 inch.).

. Column straightness

The maximum deviation between any individual characters of the same column is 0.3mm (0.012 inch.).

. Character pitch tolerance

Tolerances are:

± 0.15 mm (0.006 inch) between adjacent characters

+ 1 mm (0.040 inch)<br>- 0.3 mm (0.012 inch } between characters spaced 100 columns.

. Line spacing tolerance

Tolerances are:

± 0.25 mm (0.010 inch) on original copy, not cimilative

± 1.2 mm (0.050 inch) from original copy to fourth copy.

# SECTION VII - MAINTENANCE POLICY

## 7.1. INTRODUCTION

This chapter outline the SPPL model maintenability approach according to which both the Fielf documentation and the kit spare parts have been structured.

## 7.2. MAINTENANCE POLICY

All SPPL models have a unique maintenance policy. It can be performed by F.E. engineers who have attended a basic training on the SPPL and have a good knowledge of the subjects discussed in the PRODUCT MANUAL.

This volume can also represent a proper tool for a "self training" to be implemented in Field under the guide of an F.E. engineering who has all ready acquired a direct experience with this product.

The following description relates the Level of troble shooting which can be performed in Field utilizing the "Fault Diagnosis Procedures" and the "Spare Parts Kit" at District or National level.

MECHANICS: assembly level (head, tractors, motor base not)
subassembly level (step motors, tape potor + driver)
component level (mistor, pulleys, belt)

ELECTRONICS: board level (CPU, DRIVE, LØØCU (opt.) keyboard
board assembly (opt.)....)
component level (POWER SUPPLY components, EPROM chip on CPU PWA)

If the "Automatic T&D" option is present on the SPPL the replacement level remains the same, but the intervention time is reduced because of the fault isolation simplicity.

# SECTION VI

# INSTALLATION/DEINSTALLATION

## 8.1. PHYSICAL INSTALLATION

### 8.1.1. Tools and Required Materials

Personal F.E. tools kit.

### 8.1.2. Uncrating

The SPPL is shipped in a pack external to which are affixed two forms giving:

- list of contents
- guide to unpack

Ensure that the unit is removed according to the unpacking guide and therefore inspect for possible damages.

### 8.1.3. Completeness Check-Out

The SPPL must be shipped complete of:

- .1 U.D.D. Manual
- .1 Inked Ribbon Cartridge
- .1 A.C. Cable
- .1 Interface Cable

## 8. 2. ELECTRICAL INSTALLATION

### 8.2. 1. Tools and Required Material

Personal F.E. tolls kit.

### 8.2. 2. Cabling Informations

#### 8. 2. 2. 1. A.C. Connection

1 - Remove the upper cover
2 - Remove paper feeding knob screw and extract the knob
3 - Remove the upper cover screws (4 on MINA,3 on MARA) and extract the cover
4 - Connect the AC cable to the plug placed on the rear right side of the unit (SEE NOTE)
5 - Remove the clamp which impedes the head sliding
6 - Remove the post blocking the mechanics to the basis and store it.
The column is blocked by a nut located under the base (figure 8 . 2. 2. 1A. ).

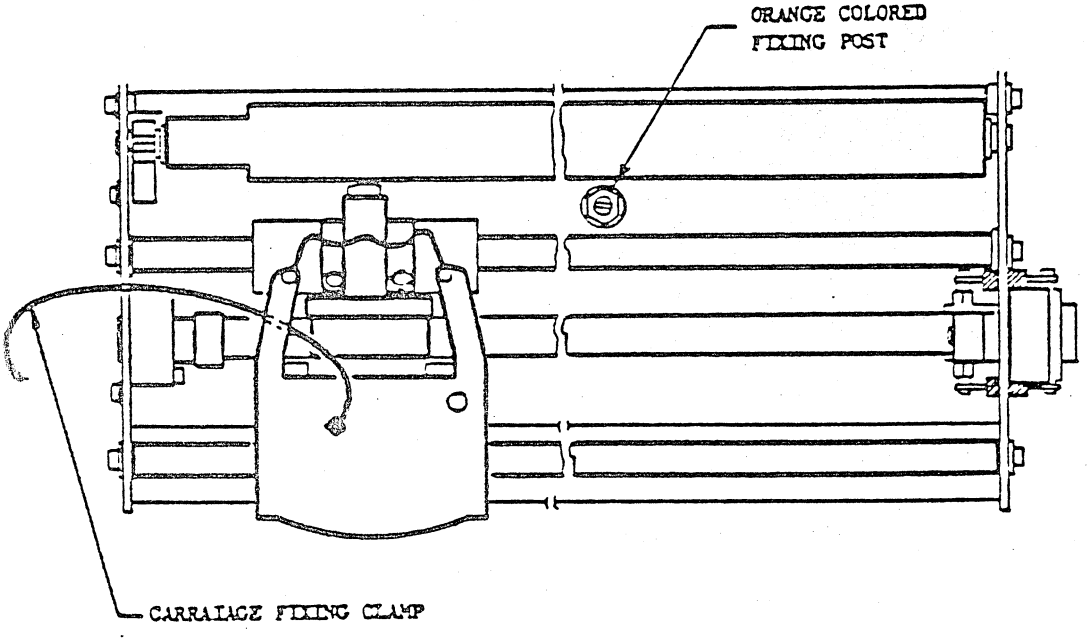



Figure 8. 2. 2. 1A.

NOTE

The SPPL is provided with a network cable having a tree-pole plug (see figure 8.2.2.1B.).
The automatic protection on the breaker is present only on the phase wire.
Therefore it is necessary for the customer to provide the electric power supply through a polarized-type outlet which can be adapted to the standard plug.

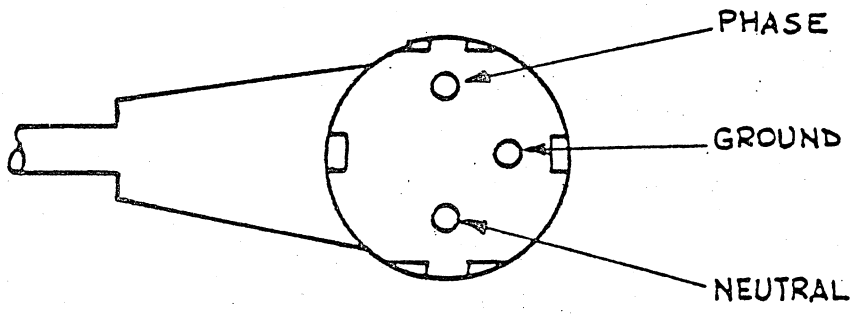


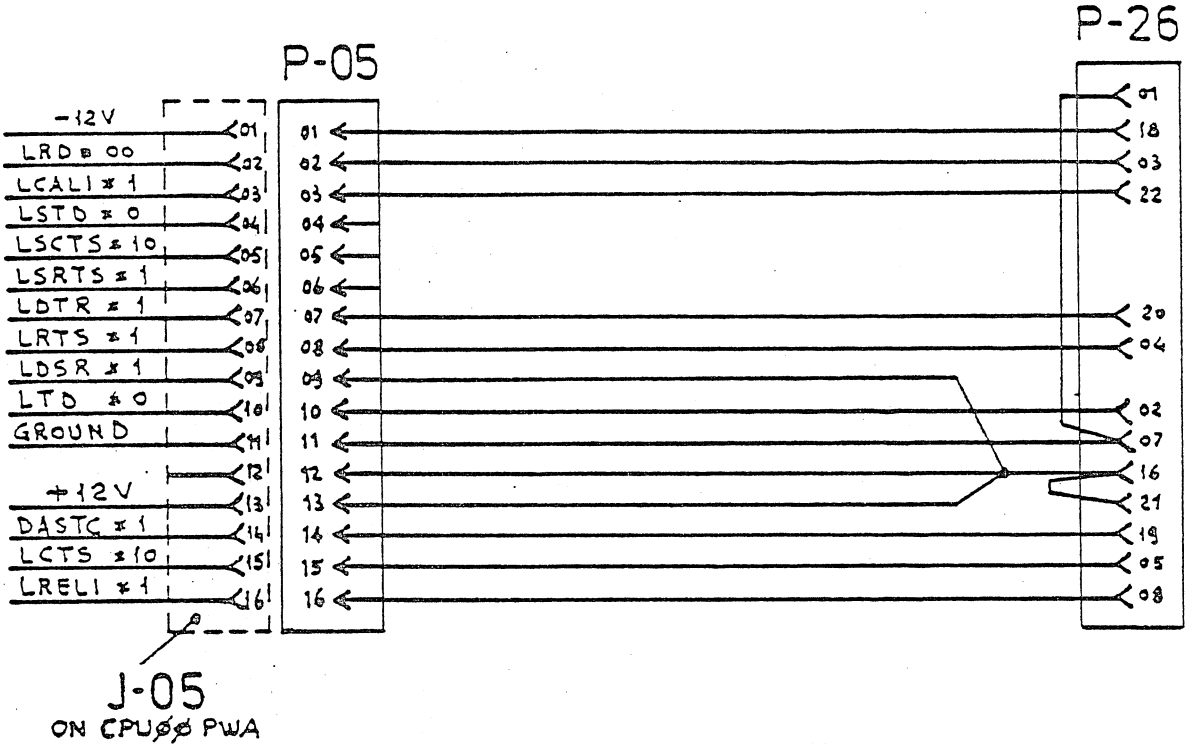

Figure 8.2.2.1B.

WARNING

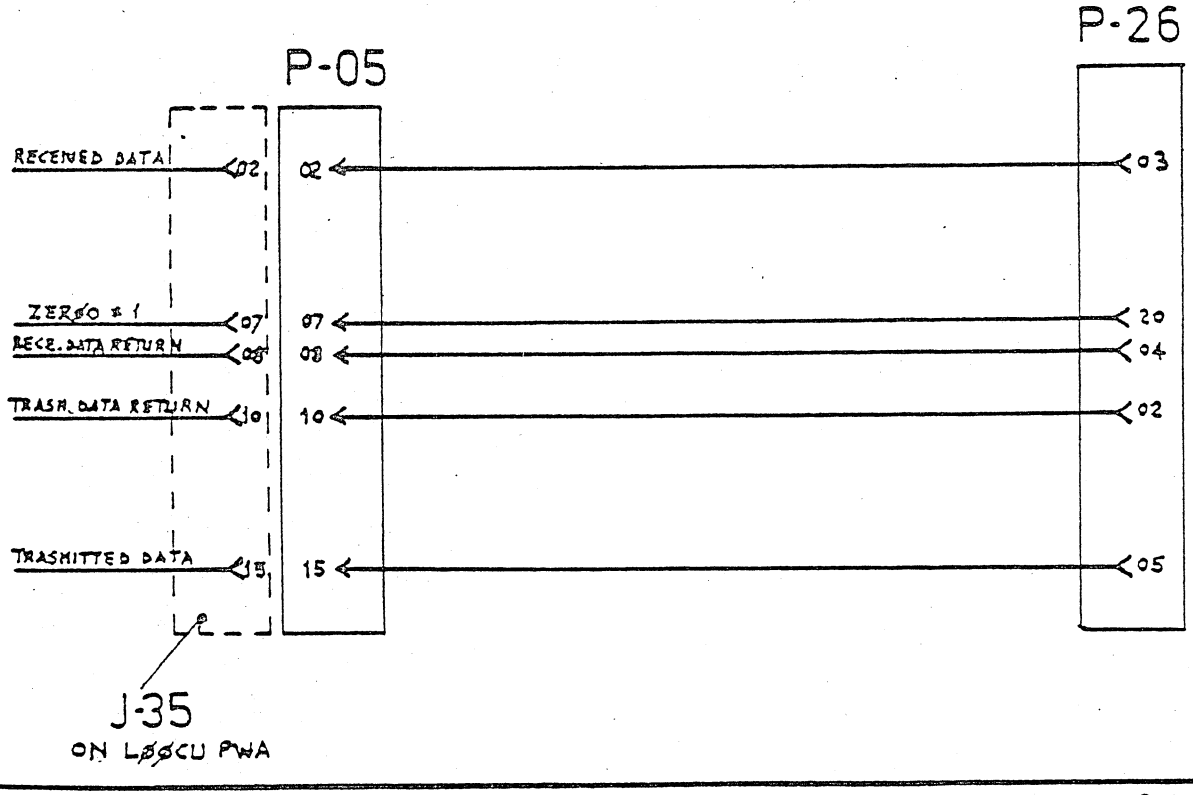
The automatic protection on the breaker is present only on the phase wire.
If the tree-pole plug is replaced with a normal plug or if it is connected in a not polarized outlet the unit may remain under tension also if the breaker is in "Power Off".
In any case, for maintenance or for emergency conditions, it is absolutely necessary to disconnect the unit's plug from the power supply.

| Honeywell<br>Honeywell Information Systems Italia | | SPEC. NO.<br>A 78120758 | SHEET<br>48 | REV.<br>CA |
|---|---|---|---|---|

## 8.2.2.2 Interface Cable connection (cable P.N. 78120180-002)

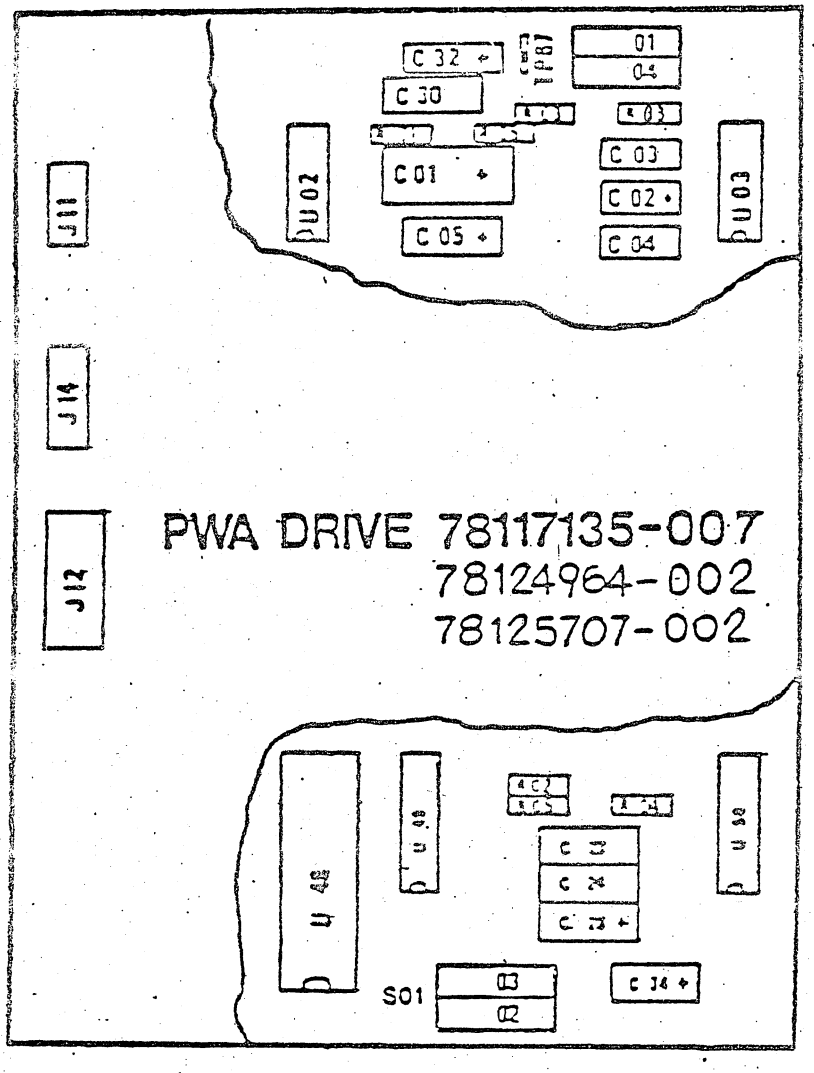


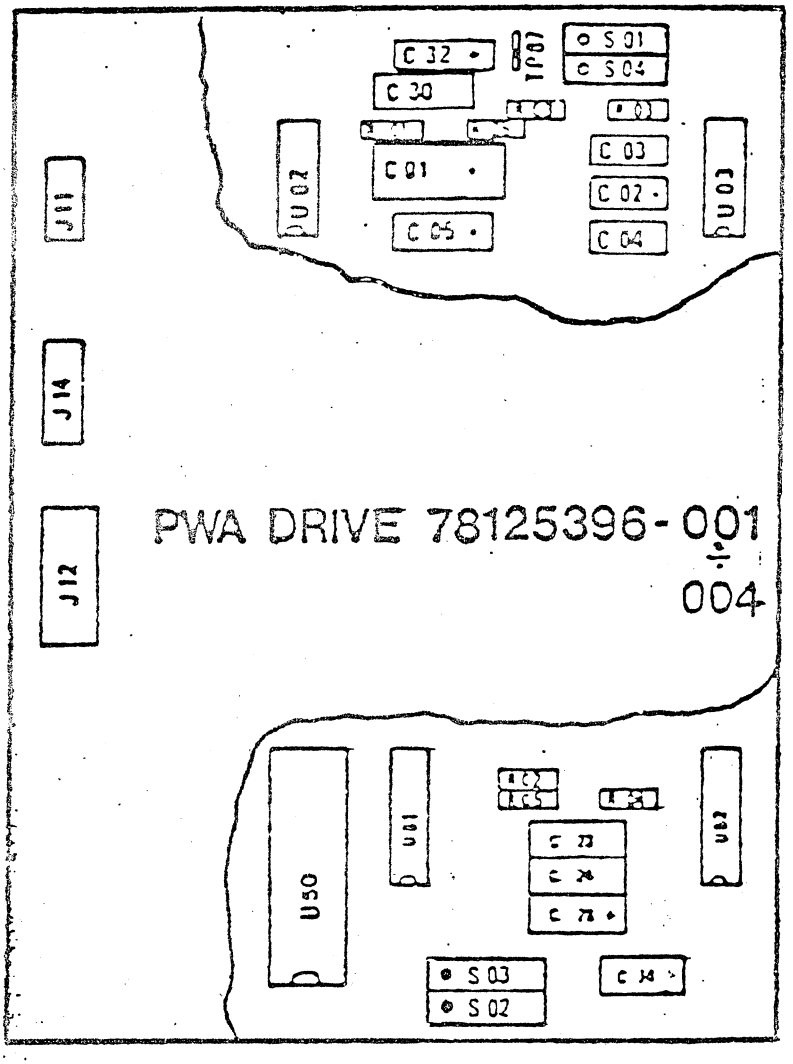

## 8.2.2.2.1. Interface Cable connection Current Loop



8.2.2.1. Unit Customization

Set the DRIVE and CPUØØ boards switches according to the informations supplied in the delivery form.
If the involved unit, features some options, it is necessary to correctly customize the involved boards, with the aid of the manual and of the following layouts.

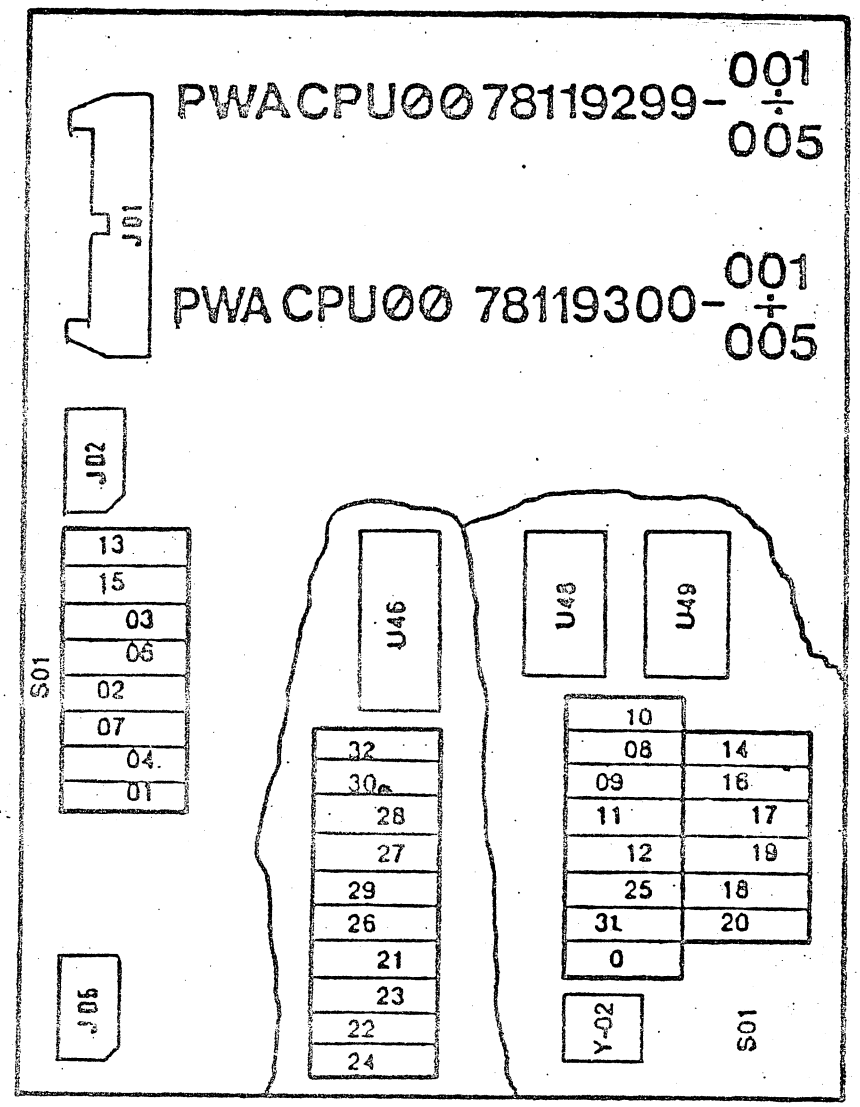





All the switches (S01-01/02/03/04) must be ON.

ATTENTION

If the involved unit is not correctly customized it is possible that, upon switching ON, the breaker, goes to POWER OFF.




NOTE A

S01-0 switch correspond to S01-05 switch to properly set the switches see table 1.

# ROSY 26.1

TABLE 1

DIP SWITCH OPTIONS AVAILABLE ON ROSY 26.1

| | | |
|---|---|---|
| S-01 01 | ON<br>OFF | MUST BE OFF |
| S-01 02 | ON<br>OFF | MUST BE ON |
| S-01 03 | ON<br>OFF | MUST BE OFF |
| S-01 04 | ON<br>OFF | MUST BE OFF |
| S-01 05 | ON<br>OFF | MUST BE OFF |
| S-01 06 | ON<br>OFF | MUST BE ON |
| S-01 07 | ON<br>OFF | MUST BE OFF |
| S-01 08 | ON<br>OFF | INDIFFERENT |
| S-01 09 | ON<br>OFF | READY STATUS AT POW. ON<br>STAND-BY STATUS AT POW. ON |
| S-01 10 | ON<br>OFF | 132 COLUMNS<br>80 COLUMNS |
| S-01 11 | ON<br>OFF | PRINT DIAMON IF PARITY ERR.<br>NO CHECK PARITY |
| S-01 12 | ON<br>OFF | WITHOUT KEYB. TRANSC.<br>WITH KEYB. TRANSCODIF. |
| S-01 13 | ON<br>OFF | MUST BE ON |
| S-01 14 | ON<br>OFF | NORMAL CONNECTION<br>VIP HARD COPY CONN. |
| S-01 15 | ON<br>OFF | FULL DUPLEX MODE<br>HALF DUPLEX MODE |
| S-01 16 | ON<br>OFF | ENABLE V.T. OPTION<br>DISABLE V.T. OPTION |
| S-01 17 | ON<br>OFF | QWERTZ KBD<br>AZERTY KBD |
| S-01 18 | ON<br>OFF | LOCAL PRINT |
| S-01 19 | ON<br>OFF | BUFFER OVERFLOW SIGNAL |
| S-01 20 | ON<br>OFF | PRINT UPPER & LOWER CASE<br>PRINT UPPER CASE ONLY |
| S-01 21 | ON<br>OFF | INDIFFERENT |
| S-01 22 | ON<br>OFF | INDIFFERENT |
| S-01 23 | ON<br>OFF | INDIFFERENT |
| S-01 24 | ON<br>OFF | INDIFFERENT |
| S-01 25 | ON<br>OFF | WITHOUT AFF OPTION<br>WITH AFF OPTION |
| S-01 26 | ON<br>OFF | MUST BE OFF |
| S-01 27 | ON<br>OFF | MUST BE ON |
| S-01 28 | ON<br>OFF | MUST BE ON |
| S-01 29 | ON<br>OFF | MUST BE OFF |
| S-01 30 | ON<br>OFF | VFU WITH LOOP OR NO VFU<br>SFU OPTION |
| S-01 31 | ON<br>OFF | MUST BE ON |
| S-01 32 | ON<br>OFF | MUST BE OFF |

Remount all covers by performing in the reverse order steps 4 to 1 of para. 8.2.2.1.

8.2.3. Switch - On Procedure

Check that the breaker is "ON".
In this position AC and DC voltages are present inside the unit.

8.2.4. On - Line Test Procedure

Refer to diagnostic procedure of the system to which the S.P.P.L. is connected.

8.2.5. Off - Line Test Procedure

See flow fig. 8.2.5A.

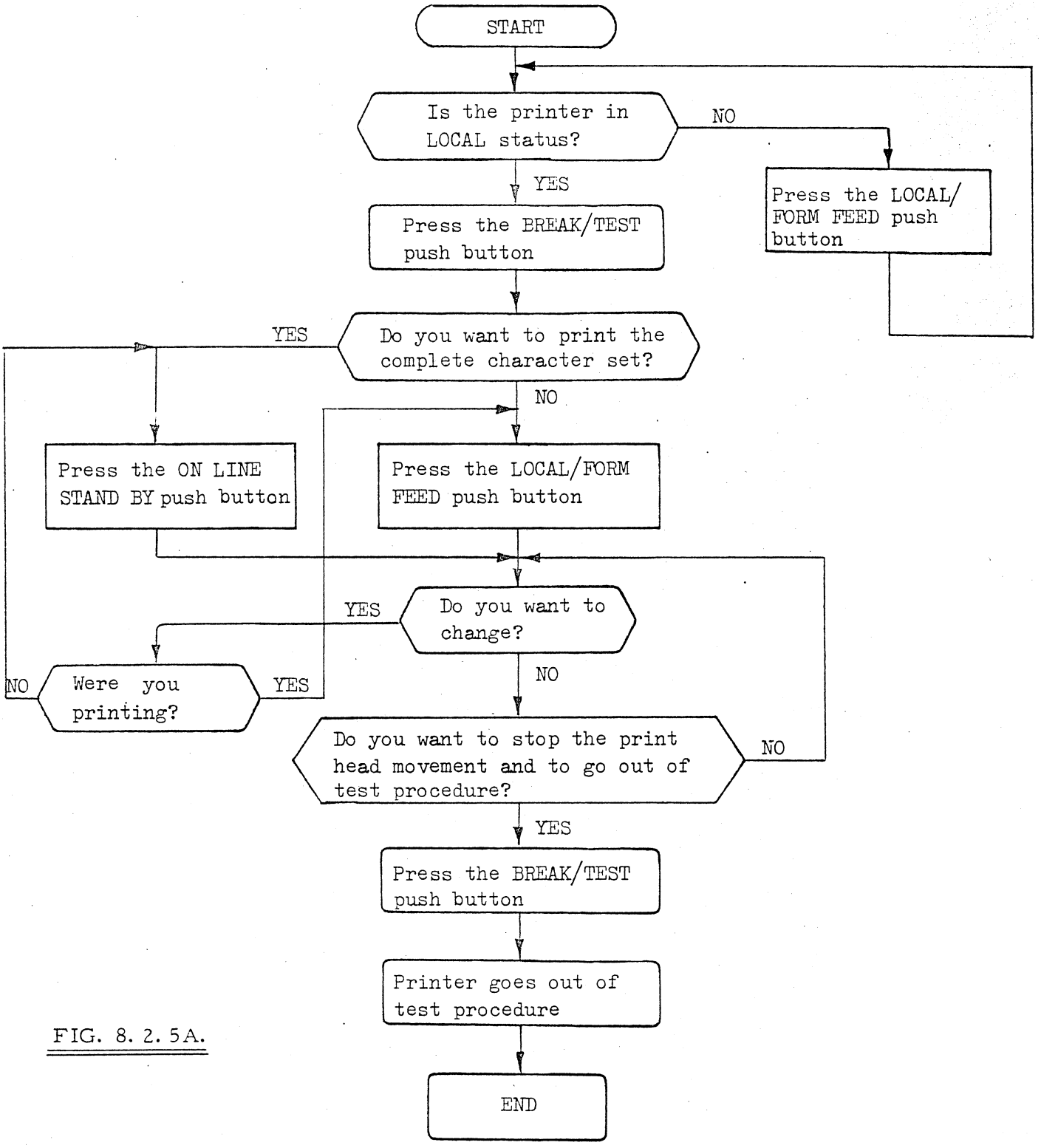

START
Is the printer in LOCAL status?
NO
YES
Press the LOCAL/ FORM FEED push button
Press the BREAK/TEST push button
Do you want to print the complete character set?
YES
NO
Press the ON LINE STAND BY push button
Press the LOCAL/FORM FEED push button
Do you want to change?
YES
NO
Were you printing?
NO
YES
Do you want to stop the print head movement and to go out of test procedure?
NO
YES
Press the BREAK/TEST push button
Printer goes out of test procedure
END

FIG. 8. 2. 5A.

## 8.3. DEINSTALLATION

### 8.3.1. Tools and Required Materials

Personal F.E. tools kit.

### 8.3.2. Product Integrity and Disconnection Procedure

Check the integrity of the product and the completeness of documentation and materials above listed:

.1 U.D.D. Manual
.1 Inked Ribbon Cartridge
.1 A.C. cable - connected -
.1 Interface cable - connected -
.1 Paper Guide (if VPP option is present)

- Disconnect the interface cable and store it.
- Disconnect the A.C. cable by performing the operations in the reverse order with respect to the installation operations.
- Insert the screw of step 8.2.2.1. item 6.
- Block the carriage movement along the bars (step 8.2.2.1. item 5).

The material which has been dismounted together with documentation and the changes which have not been executed, shall be shipped together with the machine.

# SECTION IX - THEORY OF OPERATIONS

## 9.1. INTRODUCTION

This section describes the functional operations of the serial printer.
The major functional blocks are splitted in:

- Power supply
- Power and analog circuits
- Logic circuits with 8080 microprocessor
- Fault protections

For each section the functional blocks are shown.

## 9.2. POWER SUPPLY

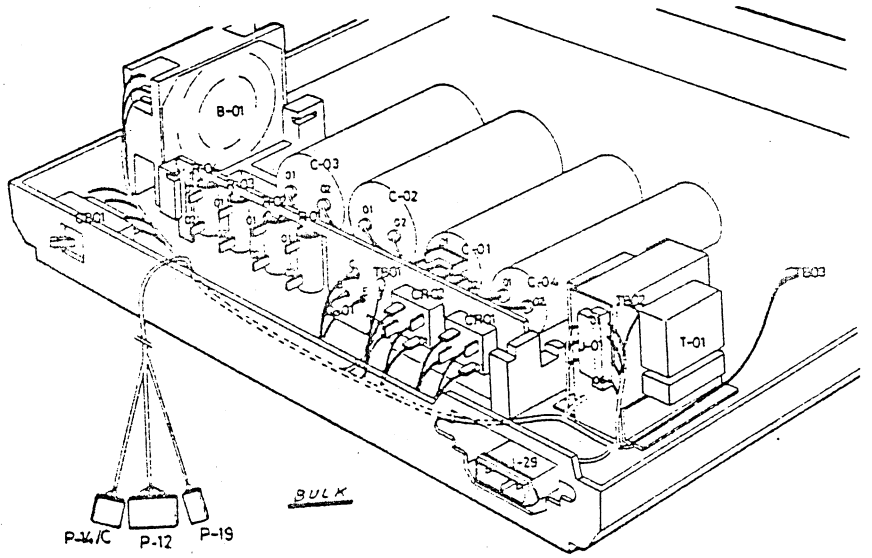
The power supply includes the "controlled voltage transformer" (C.V.T.) the rectifiers and capacitors, the breaker and the voltage regulators.
When the breaker is in ON condition, the line voltage is applied to the primary of the transformer, so the following DC, unregulated voltages are generated:

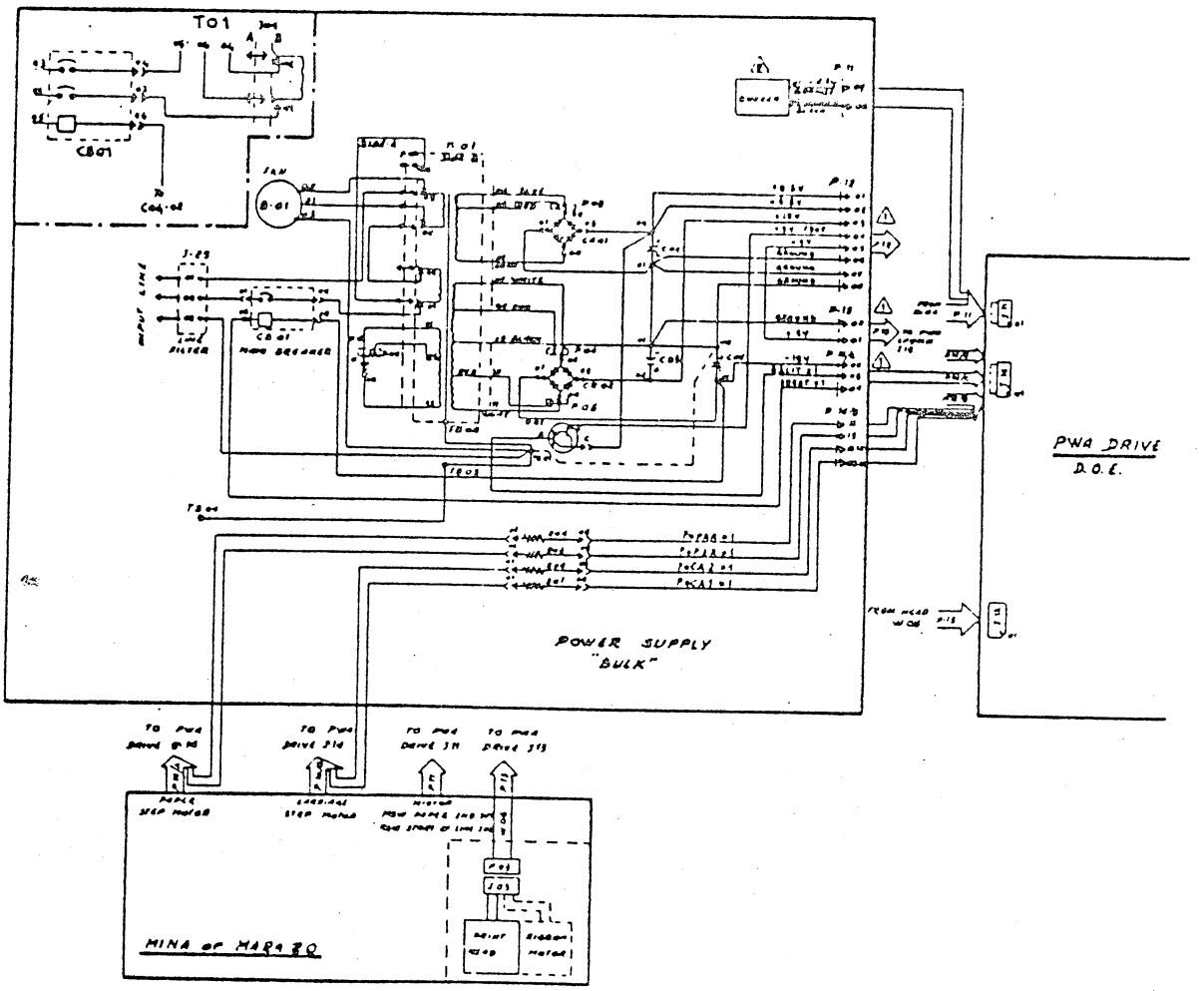
+ 8,5 V, 12 A
+ 19 V, 4,3 A
- 19 V, 0,6 A

from which are obtained the regulated voltages:

+ 5 V ± 5%, 5 A max
+ 12 V ± 5%, 0,4 A max
- 15 V ± 5%, 0,05 A max
- 12 V ± 5%, 0,1 A max
- 5 V ± 5%, 0,3 A max

Each voltage has an internal current limiter, and a low voltage protection (except for - 15V) while + 5V has also an overvoltage protection which strips off the line breaker by means of the auxiliary coil.
To allow the device trouble shooting this coil can be disconnected, so no protection is active.


B-01
C-03
C-02
C-01
C-04
CB01
TB01
CR-2
CR01
T-01
J-29
BULK
P-14/C
P-12
P-19


TO1
CB01
B-01
POWER SUPPLY
"BULK"
PWR DRIVE
D.O.E.
MINA or MARQ 80

## 9.3. POWER AND ANALOG CIRCUITS

Only one analog circuit is present on the device: the magnetic sensor amplifier that amplifies the sinusoidal signal coming from the "mistor".
The adjustements, "balance and amplitude", are necessary to obtain a correct output signal.
The power circuits consists of:

- Carriage driver : these circuits drive a four phase stepping motor and a transistor for "enhancement mode" to allow fast carriage acceleration.
- Paper drive : these circuits drive a four phase stepping motor identical to carriage motor and a transistor for enhancement mode to allow fast paper acceleration.
- Hammer drivers: these circuits drive seven printing head solenoids according to the commands coming from the characters generator.
- Ribbon driver : these circuits supply a constant voltage to the cartridge ribbon motor.

## 9.4. LOGIC CIRCUITS

The logic consists of the following main parts:

- Microprocessor and associated kit of LSI circuits.
- Random logic for DOE signals generation.

### 9.4.1. MICROPROCESSOR CIRCUITS

The microprocessor part of the logic design is implemented by an 8080-A uP, five 1KX8 bits 8708 EPROMS for storing control programs, two 256X4 bits 8111-2 RAMS used like process working area and data buffe r of 64 characters.
Interrupt levels are handled by a priority interrupt circuit unit 8214 and additional masking gates to get individual masking function capabilities. Masking involves only the four highest priority levels.

The EIA RS-232/C communication interface is implemented by a 8251 universal synchronous and asynchronous transmitter and receiver circuit connected to the 8080 system data and address bus.
Bit rate generation circuits providing line timing clock for 110 BPS 200 and 300 BPS and drivers and receivers are also included.
Several 8212 I/O ports are used to interface the operator panel, keyboard and all the available straps.
These circuits are physically located on the CPU BOARD.

## 9.4.2. RANDOM LOGICS

The signals to drive the DOE power circuits for the carriage and paper motors, print head, etc., are generated by the random logic located on the DRIVE board.
It consists mainly of:

- Paper and print delay counter to generate the correct timing for print head commands and paper motor signals.
- Carriage motor delay counter for timing of the carriage motions.
- Paper and carriage motor phases generation.
- Position sensor sampling to draw data for carriage motion speed control.

## 9.5. FAULT PROTECTIONS

Provisions are made in order to protect the printer against faults.
Protections include basically both analogic circuitry and firmware.
A fault protection on both carriage and paper "enhancement mode" is activated when the transistors ate in conduction and no commands are present. This is due to the fact the stepping motors and drivers can not stay indefinitely in this condition without damage.

The same protection is activated when hammer current limits are surpassed or the firmware stored into memory stops for any reason, so avoiding the device to stay in indefinite condition.

### 9.5.1. FIRMWARE FAULT PROTECTION

Fault routines allow to detect mainly:

- Carriage motion faults and errors
- Firmware out of sequence conditions

#### 9.5.1.1. CARRIAGE FAULT

Carriage fault can happen because of detecting an out of the allowed position range limits condition. In that case carriage is protected against possible mechanical damages by disabling the stepping motor phases so that carriage will get idle.
One additional protection is carried out by a firmware error counter able to detect motion command and no motion conditions due to unexpected obstacles to the carriage motion or to excessive oscillations on carriage stop.
Detection of these Faults cause ON LINE to STAND-BY state transition allowing to advise the operator about the anomalous conditions.

#### 9.5.1.2. FIRMWARE FAULT

Firmware out of sequence conditions can be mainly due to uncorrect positioning of the straps at installation level or to faults which prevent the correct micro-processor program counter operation.
Under out of control operations damages to power circuitry or mechanical parts like print head are possible.
Protection consists of special sequence exercised by the main firmware.
Where these sequences are not branched within a certain expected time the protection will be activated.

# SECTION X - OPTIONS

## 10.1. INTRODUCTION

The Rosy 26.1 BACK OFFICE PRINTER can support the following options:

- AUTOMATIC FRONT FEED
- CURRENT LOOP 1200
- MANUAL FRONT FEED
- VERTICAL FORMAT UNIT
- BOTTOM FEED
- AUTOMATIC T&D
- PEDESTAL
- PAPER STACKED TO DESK
- " " PEDESTAL

## 10.1.1. OPTION DESCRIPTION

### 10.1.1.1. Automatic Front Feed (AFF)

This option allow the printer to provide the capability to handle Single Sheet in addition to the fanfold paper.
Mechanism physical dimensions and media characteristics are described in "AUTOMATIC FRONT FEED MECHANISM" doc. A78120245.
Normally this option is factory installed.
Should it instead be installed in field, because ordered after the SPPL installation, it is necessary to follow the instructions contained in the OPTION CHANGE A78121685 which must be sent together with the option material. The AFF option is exclusive with antinoise cover.

10.1.1.2. Control

A LOAD/UNLOAD push button placed on the mechanism, allows the operator to load or unload the Single Sheet document. This button is active only in LOCAL or READY status.

10.1.1.3. Functionalities

The sheet to be handled by the AFF option has to be manually inserted into the guides (previously adjusted in distance) and positioned against the mechanical reference (tile).
The tile positionement is obtained automatically be the inserted sheet through a photosensor, as the pinch rollers opening.
The printing head during these operations is automatically positioned out of the sheet path.
The sheet loading is then obtained pushing the LOAD/UNLOAD push button of the AFF operator panel.
The sheet ejection can be obtained either sending an FS ASCII CODE to the interface or pushing the LOAD/UNLOAD push button.
The sheet is then manually removed.

10.1.1.4. Strapping Option Aff

Strapping option AFF (see table 1) and AFF PWA (see fig. 10.1.1.4A).

| | | |
|---|---|---|
| S-01 11 | ON | SINGLE SHEET + FANFOLD MOVEMENT |
| | OFF | SINGLE SHEET ONLY MOVEMENT |
| S-01 12 | ON | S.S. FIRST PRINTABLE COLUMN AT 56 |
| | OFF | S.S. FIRST PRINTABLE COLUMN AT 53 |

TABLE 1

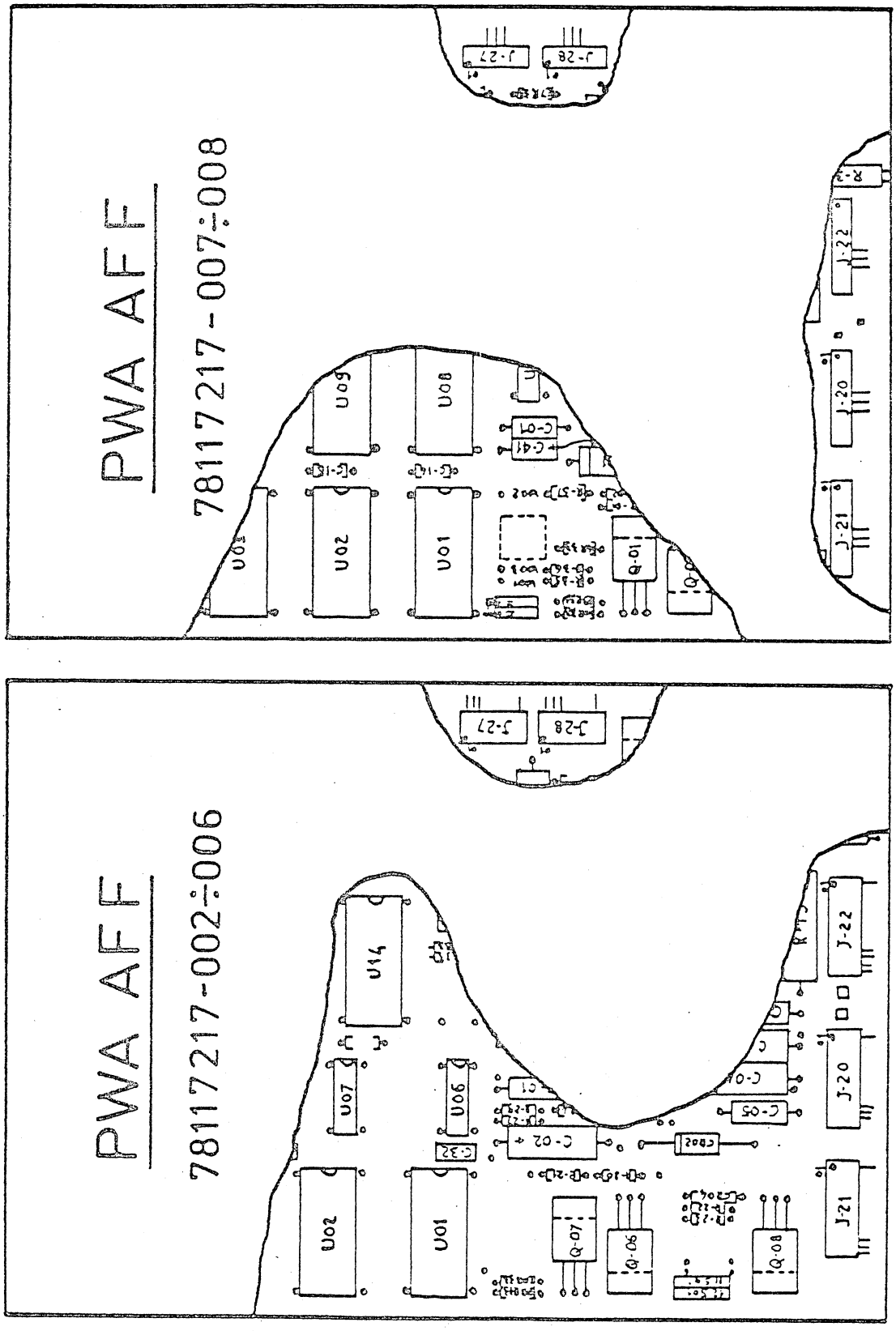



FIG. 10.1.1.4"A"

# MEDIA

## 10.1.1.5. FORM DIMENSIONS

The minimum and maximum dimensions of forms the handle are:

- Width : 12 cm to 21 cm
- Height : 6.5 cm to 29.7 cm

No hole is allowed in the sensor area.

## 10.1.1.6. NUMBER OF COPIES

The total number of copies of single sheet and their characteristics are defined in the following table:

| Number of copies | Type of media | | Weight |
|---|---|---|---|
| One original | light cardboard | | 55 ÷ 120 g/m$^2$ |
| 1 original + up to 3 copies | paper | original | 55 ÷ 75 g/m$^2$ |
| | | copies | 35 ÷ 75 g/m$^2$ |
| | carbon | | 14 ÷ 35 g/m$^2$ |
| 1 original + up to 4 copies | paper | original | 55 ÷ 75 g/m$^2$ |
| | | copies | 35 ÷ 45 g/m$^2$ |
| | carbon | | 14 ÷ 35 g/m$^2$ |

## 10.1.1.7. PAPER FEED PERFORMANCES

- Line spacing : 4.23 mm (1/6") with incremental tolerance ± 1%.
- Line feed time : 50 ms max.

. Vertical tabulation, positioning and ejection speed: 7 ips, Nominal.

. Document positioning error: ± 1.5 mm (first printable line).

. Sensor position: 5 mm ± 2 mm from the left sheet margin.

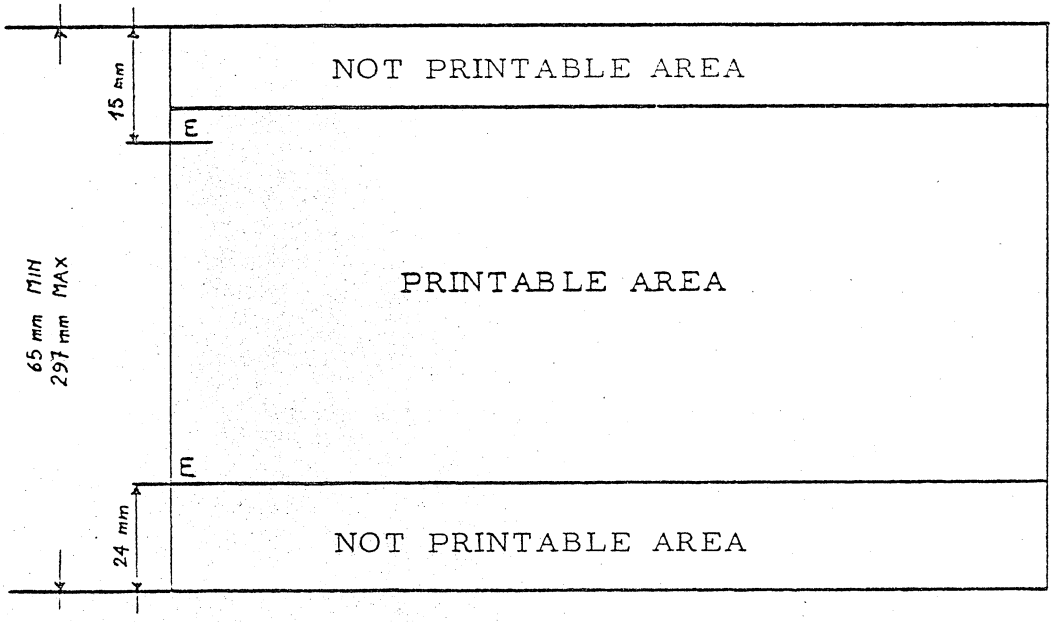
10.1.1.8. PRINTING AREA

. First printable line position: 15 mm from top edge nominal (character baseline).

. Last printable line position: 24 mm from bottom edge minimum (character baseline).

. Printable columns: 80 max.

The following figure shows the allowed cut form dimensions:




The left-most position of the left edge of the single sheet corresponds to column 50 of the printer; the right-most position of the right edge of the single sheet corresponds to column 134 of the printer.
Once positioned the left guide according to the first printable position the right guide can be moved to accomodate the sheet dimensions.

10.1.1.9. MEDIA TICKNESS DIFFERENCE

The two media printed with the option, both in the overlapped and in the not overlapped situation, can have a thickness difference of 0.1 mm. For larger differences the printing quality as a function of actual head life is degrated.

The resulting head life is typically:

difference 0.2 mm life 30 M chrt

difference 0.1 mm life 50 M chrt

10.1.1.10. LEFT MARGIN

The first printable column on S.S. document can be selectable (at field enginnering level) among columns 53, 61, 85, 93 corresponding to the following maximum number of columns on S.S.: 80, 72, 48, 40.

10.1.1.11. REMOTE LOADING REQUEST

When a Single Sheet loading command is received and no document is ready (insert on the guides) for loading a waiting loop is started. The LOAD light blinking will mark this waiting loops. The remote command is accomplished as here in after described:

- a document will be inserted and the LOAD push button pressed. In this case the document loading is performed.
- If a "CLEAR BUFFER" command is transmitted by the host during the waiting loop, the buffer is cleared and waiting loop stopped.
- If the LOAD/UNLOAD push button is pressed by operator while no document is present, the waiting loop is stopped but the buffer is not cleared.

10.1.1.12. VERTICAL TABULATION

When special tabs are not set for S.S., the tabs which where set for the fanfold are valid also for S.S.

## 10.2. 1200 CURRENT LOOP

This option is formed of a PWA LOOCU (see Fig. 1) or LOSFU (P/N 78121029 and 78120683, see Fig. 2), mounted on the standard logic pack (CPU-DRIVE) which transforms the interface signals from voltage levels to telegraphic-type current levels. The signals are dected by a 20 mA current flow through an optosensor. The main characteristics of this options are:

- Max line lenght : 1000 m
- Type of shilded cable : 120 nF/KM and 70 /KM telephone cable
- Current Loop : 20 mA (20 mA for "MARK" ZERO mA for SPACE)
- Distorsion : 2% at 300 Bauds<br>5% at 1200 Bauds
- Line Speed : 1200 BPS max
- Max Line voltage : 30 V (referred to ground: $\pm$ 15 V Max)

On the LOOCU/LOSFU PWA, 4 switches, properly set, establish the source of current on the TRANSMIT - DATA (see Table 1).

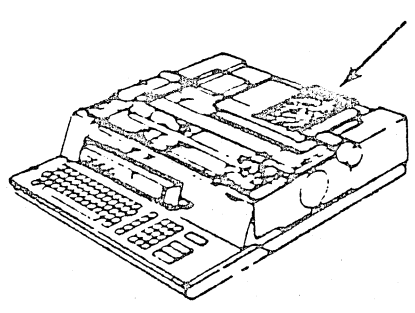



FIG. 1

TABLE 1

| | SETTING SWITCHES | | | |
|---|---|---|---|---|
| THIS INSTRUCTIONS ARE USEFUL FOR ALL SPPL MODEL ROSY 26.1 | S-01 03 | S-01 01 | S-01 02 | S-01 04 |
| INTERFACE CURRENT PROVIDED BY EXTERNAL SOURCE | OFF | ON | OFF | ON |
| INTERFACE CURRENT PROVIDED BY LOOCU-LOSFU BOARD | ON | OFF | ON | ON |

For the interface, set on a modem-like standard connector, see para. 8.2.2.2.1. interface cable connection current loop.

The current supplied to the TRANSMIT DATA is considered ACTIVE if it is generated by the option and PASSIVE if it is generated by an EXTERNAL source.
The current to the RECEIVED DATA shall be exclusively supplied by an eternal source.

Signal on the interface connector (P-26) are as follows:

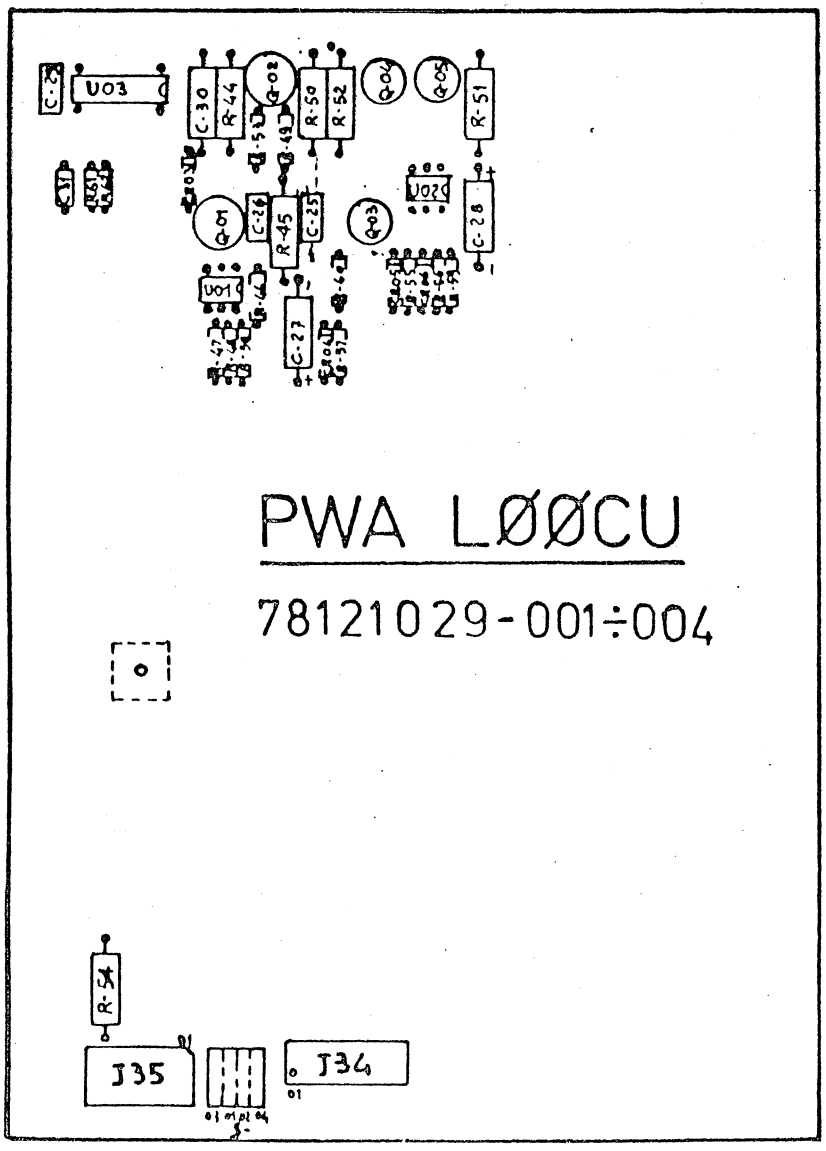
P26-3 RECEIVED DATA ..... : +
P26-4 RECEIVED DATA RETURN ... : -
P26-2 TRANSMIT DATA ..... : - { ACTIVE OPT
P26-5 TRANSMIT DATA ..... : + { PASSIVE OPT

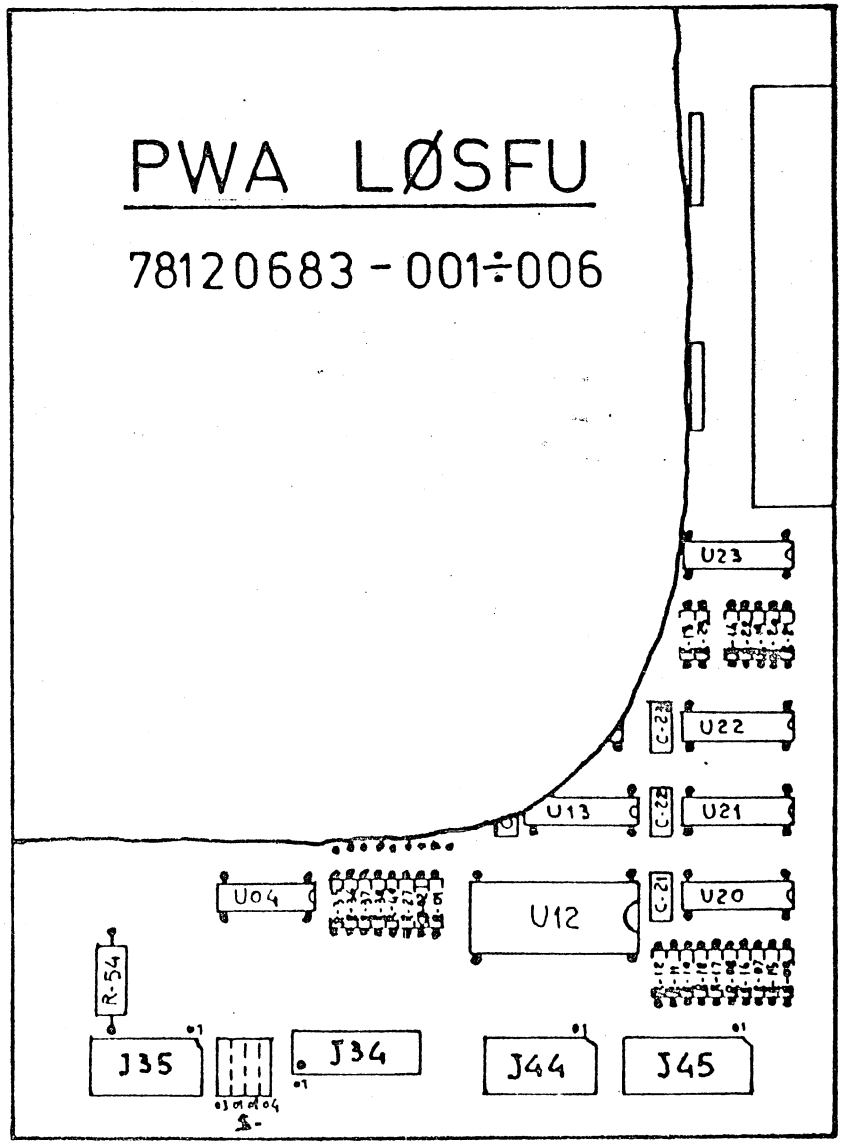
The CURRENT LOOP 1200 option can be installed both in factory and in field, on the SARA/ROSY MODELS.

NOTE: Exclude the option to launch the T&D and carry out the following operations:

- Extract J35 from the LOOCU/LOSFU and insert it in J05 on the CPU
- Extract J04 from the CPU

Restore the original connections after using the T&D.

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SPEC. NO. A 78120758

SHEET 69

REV CA

FIG. 2

## 10.3. MANUAL FRONT FEED (MAFF)

This is an option which permits to print, besides than on normal forms, on single forms manually inserted and extracted from the appropriate mechanical assembly. This option accepts forms of max 132 columns.

## 10.3.1. VERTICAL FORMAT UNIT (VFU)

The vertical forms control feature consists of a two-track tape controlled tractor carriage.
This feature provides vertical forms movement under control of instructions received from the control unit. The two channels are designated top of form and bottom of form. The top of form can also be operated manually.
Bottom of form generates only a signal available on the interface and is controlled by spacing of holes in channel 2. Top of form is used for paper advancing and is controlled by spacing of holes in channel 1.
Punched holes on any other channel of the tape have no effect on the printer.
Data contained in the VFU tape are stored, by a reading, in resident memory.
The reading is executed pushing the VFU START push-button when in LOCAL state, till the audio alarm indicates to the operator that the VFU tape content is stored in the RAM.
After having read the VFU tape, the printer is conditioned so that the first FORM FEED occurs keeping in regard that the paper-fold has been positioned on the reference level.
Bach time the VFU tape is changed, with the device in POWER ON it is necessary to reread the VFU tape and the paper-fold must be repositioned.

## 10.3.1.a LAYOUT OF PAPER TAPE LOOP

Multiply the required form length in inches by the factor 6 to determine a number (N) of paper tape sprocket holes. A hole is required in channel 2 at the Nth sprocket hole. See Fig. 1.
If Vertical Tab positions are desired, holes are required in channel 1 at intermediate sprocket holes. There is a one-to-one

relation between the intermediate sprocket hole locations and line locations on the required form.
If the value N is less than 90, a repeat pattern is required. A second hole is placed in channel 2 at the Nth sprocket after the first.
The Vertical Tab pattern must also be repeated.
If the total number of sprocket holes is still less than 90, continue pattern repetition until the tape loop layout includes more than 90 sprocket hole intervals.
The value of N must not exceed 128. Where repeat patterns are used, the total tape length should not exceed 180 sprocket hole intervals.

NOTE: When making a punched paper tape prepared in accordance with Fig. 2 there is no parity bit. Therefore, if it is necessary to reproduce this tape, the tape reproducing equipment might detect a parity error.

Because the tape length cannot be less than 9 inches (22.9 cm), the VFU format on the tape for forms less than 15 inches (38.1 cm) long will have to be repeated in the tape as many times as necessary to make the total tape length at least 9 inches (22.9 cm).

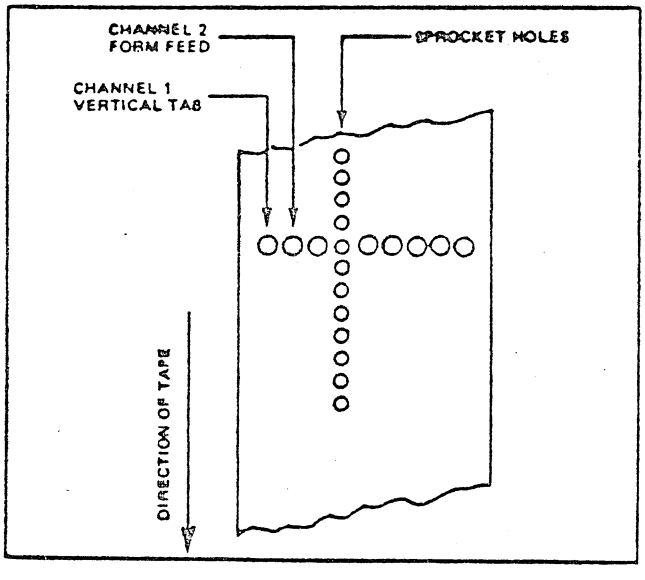



Figure 1.

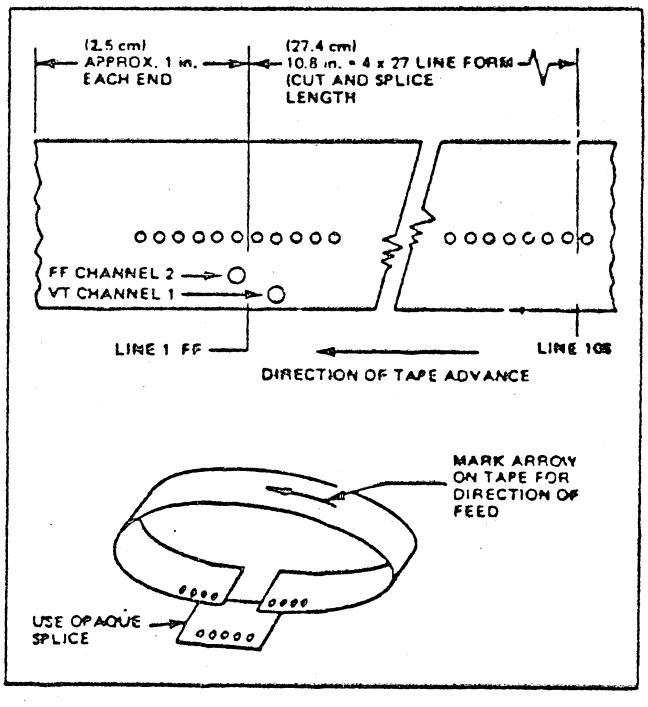
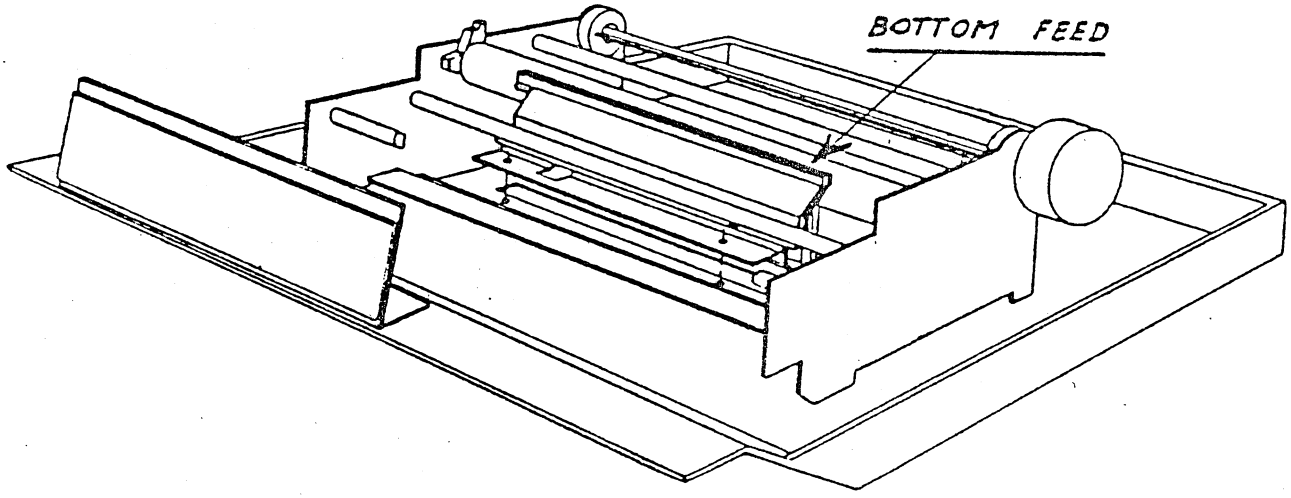



Figure 2.

## 10.4. BOTTOM FEED

### GENERAL

The option consists of 2 steep plate guides mounted on the mechanism at manufacturing or field level.
A leaf spring inside the guide gives the proper tension to the paper.
The option installation requires also the positioning on these guides (on column 15 at 3" for of printing line) of the end of paper switch normally positioned for rear feeding.
A predisposition is also provided for positioning (on column 120 at 3" for from the printing line) of a second end of paper switch which is part of the option "Second paper handler".




For the MARA mechanism the bottom feed is standard.

## 10.5. AUTOMATIC T&D

It is an option enabling fault automatic isolation on:

- CPU
- RAM
- EPROM
- DRIVE

with indication on the operator panel lamps. This option is formed of an EPROM CHIP to be inserted on the AFF board if AFF option is present or on the AFFD board otherwise.

## 10.6. OTHER OPTIONS

The other options, being of extreme simplicity, are not here described.