

GENERAL MANUAL

Olivetti Te 318

TERMINAL FOR COMMUNICATION

This manual is one of a series of manuals describing the technical and functional characteristics of the class Te 300 machines; it describes the specific model Te 318.

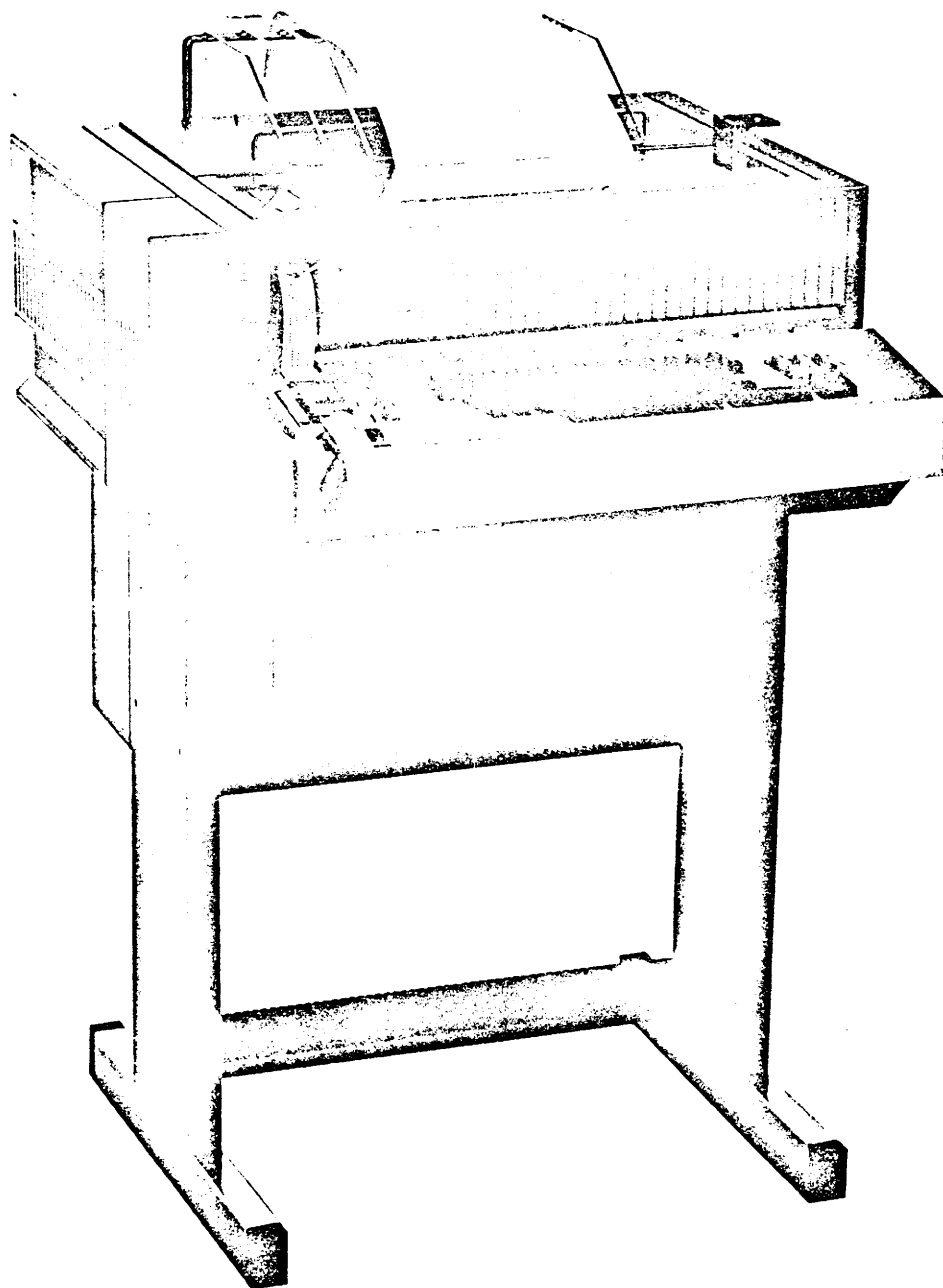
A summary table of the various Te 300 models and configurations is inserted at the beginning of the manual.

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March 1970

Cod. Mark.: 06-01-46/3-0 E
Cod. Mag. : 3943123 H



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THE CLASS Te 300 TERMINALS

The following table describes the main features of all terminals of Class TE 300, listing the differences among the various models. A detailed

description of each terminal is available in each respective General Manual.

Each model (except the TI 315) is also available in the "receiving only" type.

Model	Interface	Code	Character Format	Speed	Printing Group	Platen	Functions of Format
TI 315	Off-line	5 bit CCITT # 2		520 ch.	64 ch.	80 strokes Variable	Space Bar Carr. return & Line Feed
Te 315	Send-Recv. Serial	5 bit CCITT # 2	7.5 (send) 7-7.5 (rec.)	50-75-100 baud	64 ch.	80 strokes Variable (optional sprocket)	Carr. return & Line Feed
Te 318	Send-Recv. Serial	7 + 1 bit ISO-CCITT # 5	11 (2 stops)	110 baud (10 ch/s)	64/96 ch.	80 strokes Variable (optional sprocket)	Carr. return & Line Feed
Te 338	Send-Recv. Serial	7 + 1 bit ISO-CCITT # 5	11 (2 stops)	110 baud (10 ch/s)	64/96 ch.	120 strokes sprocket	Space Bar Carr. return Tabulation Back space
Te 339	Send-Recv. Parallel	7 + 1 bit ISO-CCITT # 5 BCD-PTTC/6	8 + strobe (parallel)	15 ch/s	64/96 ch.	120 strokes sprocket	Space Bar Carr. return Tabulation Back space
Te 349	Send-Recv. Parallel	7 + 1 bit ISO-CCITT # 5 BCD-PTTC/6	8 + strobe (parallel)	15 ch/s	64/96 ch.	120 strokes Variable Split Front Feed	Space Bar Carr. return Tabulation Back space Front feed opener Right & left line feed lever

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FOREWORD

We will start by listing some rules which have been followed in the description of this machine:

1. The TE 318 terminal is a basic unit which can be used either off-line or on-line. In either case, in order to function, the machine requires a power supply or a line control, or any other auxiliary unit, which forms a complete and specific system for an application. when connected to the basic machine.
This manual describes only the basic machine. Other manuals explain the auxiliary units which permit us to obtain specific systems when connected to the basic machine (See, for example, the description of Modem Interface Type A 021 or A 024, of Power Supply A 061, of Line Control with station-to-station conversation A 022, etc.).
2. Some mechanical groups or electrical components comprising the TE 318 permit some variables; each variable part of the terminal is identified by a letter of the alphabet followed by a number.

The variable parts are:

W	= Model
K	= Keyboard
P	= Printing wheels
F	= Function group
V	= Telegraphic speed
R	= Platen
M	= Motor circuit
T	= Telegraph circuit
S	= Service circuit

In the respective chapters of each group the presence of variables will be noted and the principal variables will be described. A complete list of variable parts is contained in the catalog of "Product Cards" and in the special catalog of "keyboards", "Printing Mechanism" and "Function Groups" of the TE 300.

3. The main devices and accessories of the TE 318 are listed in Appendix 1. Such devices and accessories are identified by the letters D and A followed by a 3-digit number. Comparison tables or rules for the selection of such devices cannot be outlined in this manual since their utilization is strictly connected with specific configurations of systems. The catalog of "Product Cards" should be consulted in such cases.

GENERAL DESCRIPTION

BLOCKS SYSTEMS

The TE 318 is a send/receive machine, coded and equipped with serial interface. It consists of mechanical and electro-mechanical groups physically interconnected in such a way as to form a single unit resembling a typewriter.

From a functional point of view the machine may be divided into two separate parts, each one having a number of mechanical or electro-mechanical groups:

The **sending part** includes:

- The keyboard
- The sending bars
- The automatic answer-back
- The tape reader (optional)
- The ribbon selector
- The serializer

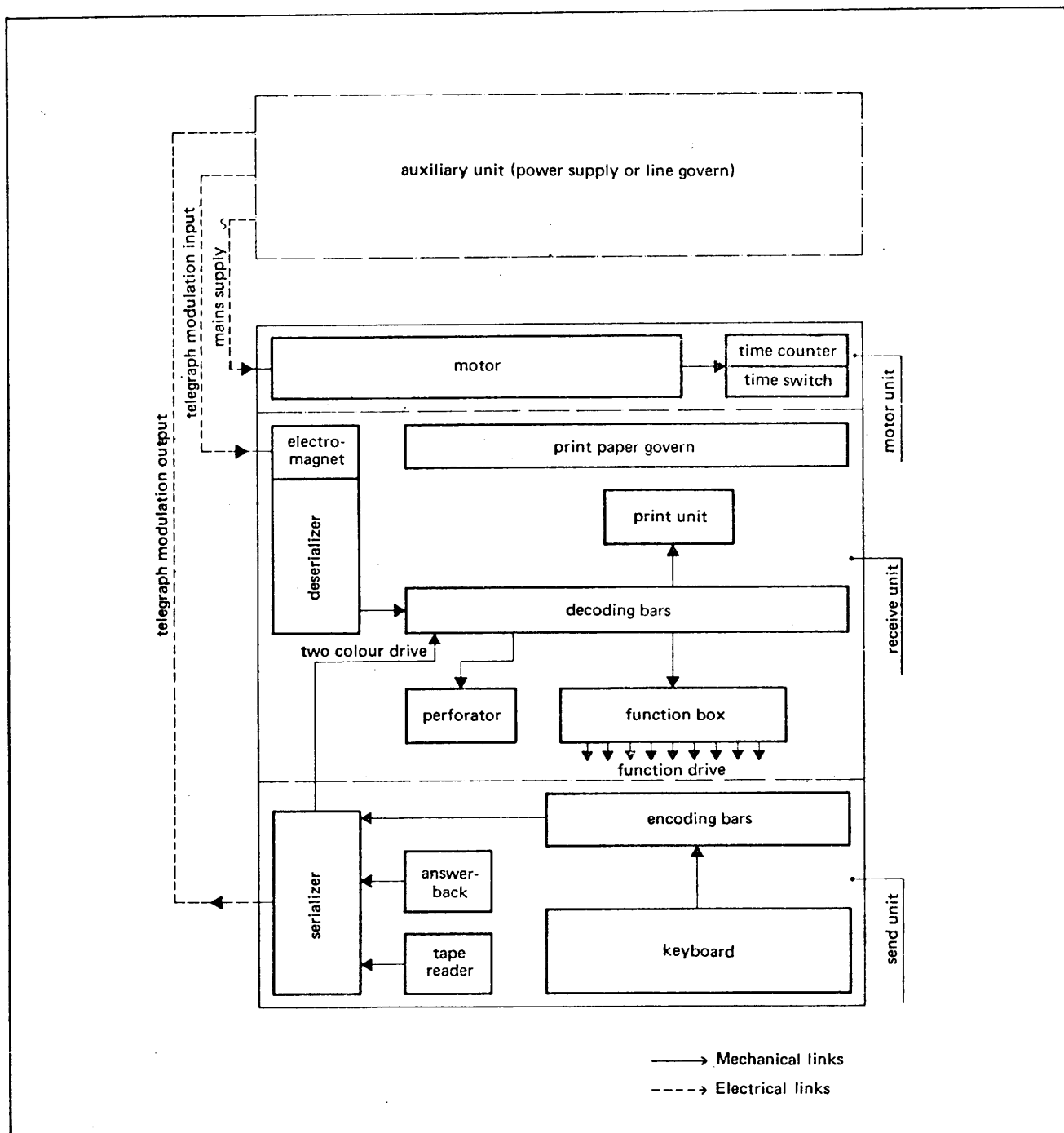
The **receiving part** includes:

- The distributor
- The selector bars
- The printing groups
- The function group
- The tape perforator (optional)
- The paper control group

To these two parts we may add the **motor group**, consisting of the hour-counter and of the time-switch, beside the motor group itself (motors with respective electric relays and *groups for transmission of movement*).

In the blocks diagram we show the above groups approximately in the same topographic position as they occupy in the machine.

With reference to the blocks diagram we will give a brief functional description of the various groups and of the connections and inter-actions existing between the groups.



The transmitter

The depression of a key (keyboard entry) causes through a servo mechanism the shifting of eight "keyboard sending bars", each one in the position 0 or 1 in accordance with the respective coding combination of that key.

The sending bars are linked to the *serializer*. The purpose of the serializer is to select the shiftings of the transmission contacts according to the status of the bars, that is of the bits forming the coding combination, adding the start and stop impulses.

in output to the line to which it is connected. The transmission contact modulates the signals through the devices of power supply and interface outside the machine. The *Automatic Answer-back* consisting of a 20 character memory, and the *punch tape Reader* control the same serializer mentioned above. Any time the serializer transmits a character on line, it supplies a mechanical signal (*ribbon selector*) to the receiving part of the machine in order to preset it for the printing in red of this character. Conversely, characters received directly from line, i.e. with inactive serializer, are printed in blank.

The receiver

Signals originating from line are received by the *electromagnet*, which transforms the electric pulses (bits) in shifts of its mobile keeper. These movements are tested by the *distributor*, which at the end of each character instructs the shiftings of the

eight *selector bars*, resulting in positions corresponding to the bits of the received character. The coding bars of reception control three separate groups:

- The *Printing Group*:
by a servo-mechanism they control the device for character selection (this selector chooses one among 64 or 96 possible characters).
- The *Tape Perforator*:
by special mechanical links the bars select which puncher will perforate the tape (bar in position 1 = hole; in position 0 = no hole).
- The *Function Group*:
When a function character (ex: Carriage Return) is present in the coding bars, the function group recognizes it and performs the respective function.
- The *Paper Control Group*:
includes the platen and all the parts interested in the feeding of the paper on which the printing takes place.

The motor group

The *motor group* is designed to supply the movement to all the above described mechanical devices of transmission and reception by gears, shafts or serrated belts.

The *hour-counter*, powered by the motor, indicates the hours of effective operation of the machine.

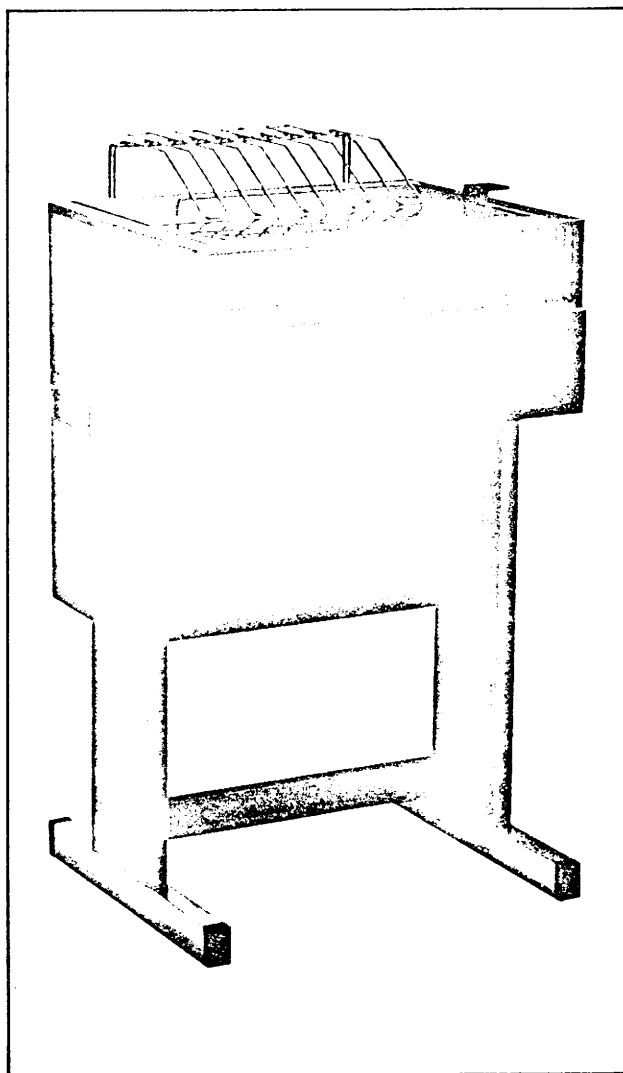
The *time-switch* stops the motor after about 40 seconds of inactivity of the machine.

"RECEIVING ONLY" MODEL

The machine may be supplied in a model for Receiving Only.

This model is called Re 318.

In such case the machine lacks all the transmitting parts, i.e. keyboard, automatic reply, reader and serializer.



OPERATING INSTRUCTIONS

As detailed later, the machine is equipped with two separate electric circuits.

The first one is the *motor circuit* which must be connected to the DC power system.

The second one is the *telegraph circuit*.

We will now describe briefly the operation of the machine.

On-line with Local Control

In this case the telegraph circuit of the machine must be connected to the telegraph line. Generally this connection is through an auxiliary device adapted to the type of connection which has to be achieved. This auxiliary device will also interconnect the conductors originating from the transmitting part of the machine with those ending in the receiving part in order that the signals issued by the transmitter reach the receiver and that the machine prints what it sends out. This operating method is called *transmission with Local Control*.

On-line in Blind Full-duplex

We list a second method of operation although rarely used: the one called *blind full-duplex*.

In this case the connection between the transmitter and the receiver does not take place and therefore the machine may transmit information on a line while receiving at *the same time* a different information on another line.

Obviously the operator who is making entries in the keyboard, has no way of rechecking on a page what he is writing.

Details on modifications to be made on the machine to obtain this method of operation will be enuciated in the Chapters, "The Serializing Group - Ribbon Selector" and "Motor Group - Switches".

Off-line (local operation)

In the specific case where the machine is used for off-line operation, the connection between the receiving-transmitting part and the direct current for the feeding of the telegraph circuit are actuated by a small power supply incorporated in the machine (optional accessories D 202 and D 203).

CODE

The standard model (W 06) of the TE 318 uses the ISO code (CCITT#5) in the various national models (See Figure 1). This code allows variations in the alphabetic part for inclusion of national symbols.

One of these variations has been adopted by the United States and is called USASCII (United States' of America Standard Code of Information Interchange) (See Figure 2). Since the variable part of the code is limited to the typing characters, the complete table of the various available versions is given by the collection "Printing Wheels" of the TE 300. We note that the code is formed in 8 columns numbered from 0 to 7.

- Columns 0 and 1 reflect all functions; of these the machine uses only the ones relating to its operation, as explained later.
- Columns 2, 3, 4, 5 have 63 graphic characters (symbols, digits and capital letters).
- Columns 6 and 7 have 31 graphic characters (including all lower case letters).

Some models of TE 318 print all the 94 graphic characters, while others print only those of columns 2, 3, 4, 5. In the latter case, if the machine receives combinations of code pertaining to lower-case letters, it will print the respective capital letter.

This characteristic of the machine can also be noted consulting the collection "Printing Wheels" of the TE 300.

							00001111 00110011 01010101 01234567									
Bits	b ₇	b ₆	b ₅	b ₄	b ₃	b ₂	b ₁	Row	Column							
									0	1	2	3	4	5	6	7
	0	0	0	0	0	0	0	0	NUL	(TC ₇)DLE	SP	0	(@) ^③	P	` ^④	p
	0	0	0	0	1	1	1	1	(TC ₁) SOH	DC ₁	!	1	A	Q	a	q
	0	0	0	1	0	0	0	0	(TC ₂) STX	DC ₂	" ^⑥	2	B	R	b	r
	0	0	1	1	0	0	0	0	(TC ₃) ETX	DC ₃	£ ^{⑤ ⑦}	3	C	S	c	s
	0	1	0	0	0	0	0	0	(TC ₄) EOT	DC ₄	\$ ^⑤	4	D	T	d	t
	0	1	0	1	0	0	0	0	(TC ₅) ENQ	(TC ₈) NAK	%	5	E	U	e	u
	0	1	1	0	0	0	0	0	(TC ₆) ACK	(TC ₉) SYN	&	6	F	V	f	v
	0	1	1	1	0	0	0	0	BEL	(TC ₁₀) ETB	' ^⑥	7	G	W	g	w
	1	0	0	0	0	0	0	0	FE ₀ (BS)	CAN	(	8	H	X	h	x
	1	0	0	0	1	0	0	0	FE ₁ (HT)	EM	)	9	I	Y	i	y
	1	0	1	0	0	0	0	0	FE ₂ (LF) ^①	SUB	*	:	J	Z	j	z
	1	0	1	1	0	0	0	0	FE ₃ (VT)	ESC	+	;	K	(l) ^③	k	③
	1	1	0	0	0	0	0	0	FE ₄ (FF)	IS ₄ (FS)	,	<	L	③	l	③
	1	1	0	1	0	0	0	0	FE ₅ (CR) ^①	IS ₃ (GS)	—	=	M	(j) ^③	m	③
	1	1	1	0	0	0	0	0	SO	IS ₂ (RS)	.	>	N	^ ^{④ ⑥}	n	— ^{④ ⑤}
	1	1	1	1	0	0	0	0	SI	IS ₁ (US)	/	?	O	—	o	DEL

NOTES

① The controls CR and LF are intended for printer equipment which requires separate combinations to return the carriage and to feed a line.

For equipment which uses a single control for a combined carriage return and line feed operation,

in the 7-bit set table, the function FE₂ will have the meaning of "New Line" (NL).

These substitutions require agreement between the sender and the recipient of the data.

The use of this function "NL" is not allowed for international transmission on general telecommunication networks (Telex and Telephone networks).

② For international information interchange, \$ and £ symbols do not designate the currency of a given country. The use of these symbols combined with other graphic symbols to designate national currencies may be the subject of other ISO Recommendations.

③ Reserved for National Use. These positions are primarily intended for alphabetic extensions. If they are not required for that purpose, they may be used for symbols and a recommended choice is shown in parenthesis in some cases.

Some restrictions are placed on the use of these characters on the general telecommunication networks for international transmission.

④ Positions 5/14, 6/0 and 7/14 of the 7-bit set table are normally provided for the diacritical signs "circumflex", "grave accent" and "overline". However, these positions may be used for other

graphical symbols when it is necessary to have 8, 9 or 10 positions for national use.

⑤ For international information interchange, position 7/14 of the 7-bit set table is used for the graphical symbol—(overline), the graphical representation of which may vary according to national use to represent ~ (tilde) or another diacritical sign provided that there is no risk of confusion with another graphical symbol included in the table.

⑥ The graphics in positions 2/2, 2/7, 5/14 of the 7-bit set table have respectively the significance of "quotation mark", "apostrophe" and "upwards arrow"; however, these characters take on the significance of the diacritical signs "diacresis", "acute accent" and "circumflex accent" when they precede or follow the "back-space" character.

⑦ For international information interchange position 2/3 of the 7-bit set table has the significance of the symbol £. Within a country where there is no requirement for the symbol £, the symbol # may be used in that position.

⑧ If 10 and 11 as single characters are needed (for example, for Sterling currency subdivision), they should take the place of "colon" (:) and "semi-colon" (;) respectively. These substitutions require agreement between the sender and the recipient of the data.

On the general telecommunication networks, the characters "colon" and "semi-colon" are the only ones authorized for international transmission.

USASCII CODE

Figure 2

b7 b6 b5 Bits b4 b3 b2 b1 COLUMN ROW					0 0 0	0 0 1	0 1 0	0 1 1	1 0 0	1 0 1	1 1 0	1 1 1
					0	1	2	3	4	5	6	7
0	0	0	0	0	NUL	DLE	SP	0	e	P	'	p
0	0	0	1	1	SOH	DC1	!	1	A	Q	a	q
0	0	1	0	2	STX	DC2	"	2	B	R	b	r
0	0	1	1	3	ETX	DC3	#	3	C	S	c	s
0	1	0	0	4	EOT	DC4	\$	4	D	T	d	t
0	1	0	1	5	ENQ	NAK	%	5	E	U	e	u
0	1	1	0	6	ACK	SYN	&	6	F	V	f	v
0	1	1	1	7	BEL	ETB	'	7	G	W	g	w
1	0	0	0	8	BS	CAN	(	8	H	X	h	x
1	0	0	1	9	HT	EM	)	9	I	Y	i	y
1	0	1	0	10	LF	SUB	*	:	J	Z	j	z
1	0	1	1	11	VT	ESC	+	;	K	[	k	{
1	1	0	0	12	FF	FS	,	<	L	\	l	
1	1	0	1	13	CR	GS	-	=	M	]	m	}
1	1	1	0	14	SO	RS	.	>	N	^	n	~
1	1	1	1	15	SI	US	/	?	O	_	o	DEL

SPEED AND FORMAT OF THE CHARACTER

The TE 318 serializes (output) and deserializes (input) characters at a speed of 110 Baud.

The format of the character is of 11 bit:

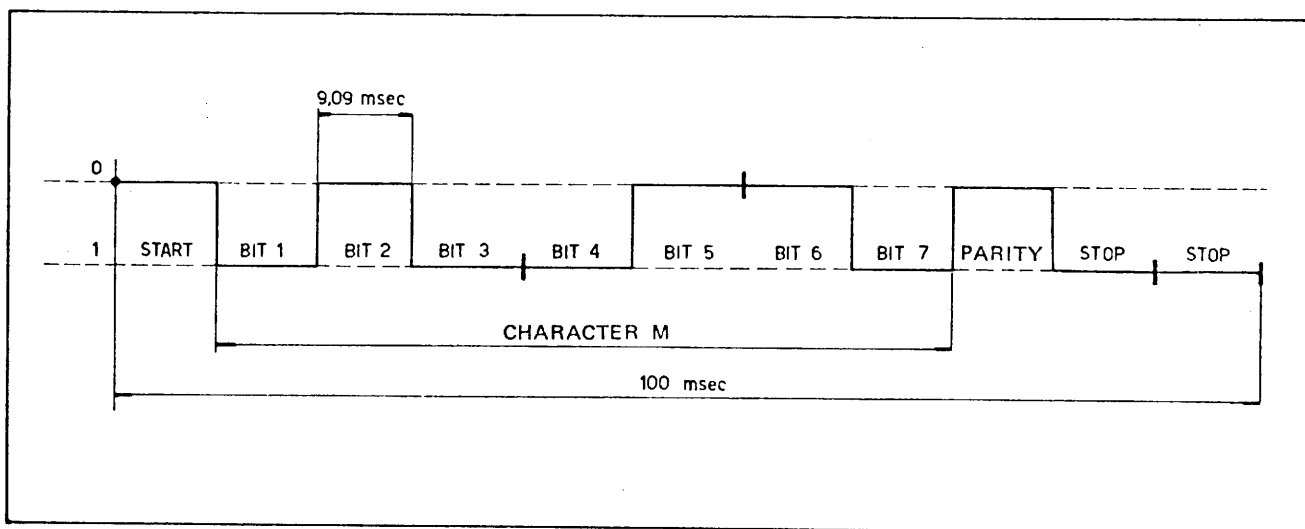
1 bit of start

7 bits of information (according to ISO code)

1 parity bit (in order that the total of "1" bits of information and of parity results even)

2 bits of stop

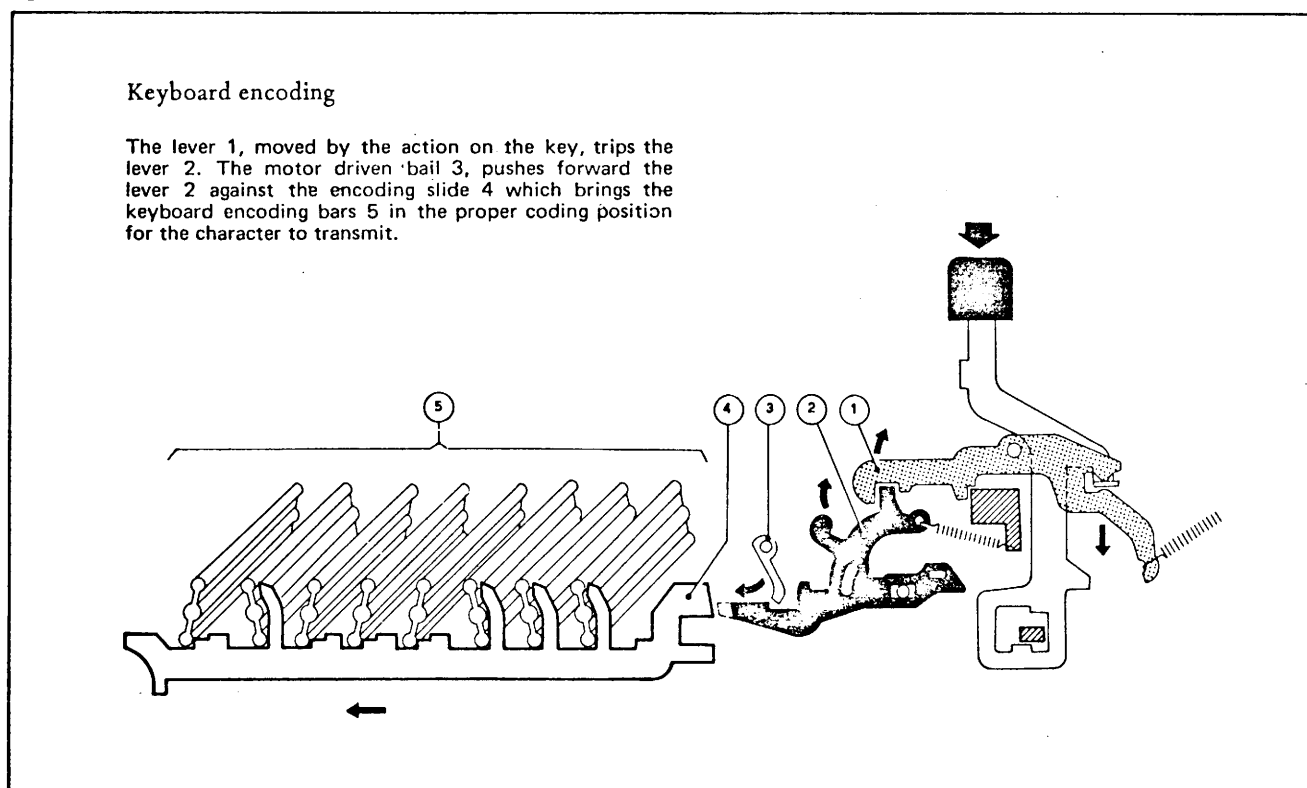
Consequently the speed of the machine is of 10 character/second. This speed is designated with the symbol V4.



THE TRANSMITTER

THE KEYBOARD

The keyboard of the TE 318 is of "motor-device" type, that is the various parts and particularly the sending bars are actioned by the motor of the machine. The schematic of the operation of keyboard linkage is shown in the following figure.



The maximum capacity of the keyboard is 67 keys; each key may generate any two characters; this is due to the fact that two inter-independent coding slides correspond to each key. The keyboard is a variable part of the machine and is coded with a letter K followed by a number of three digits. The variability is in function of the Country as well of the use to which the machine is assigned.

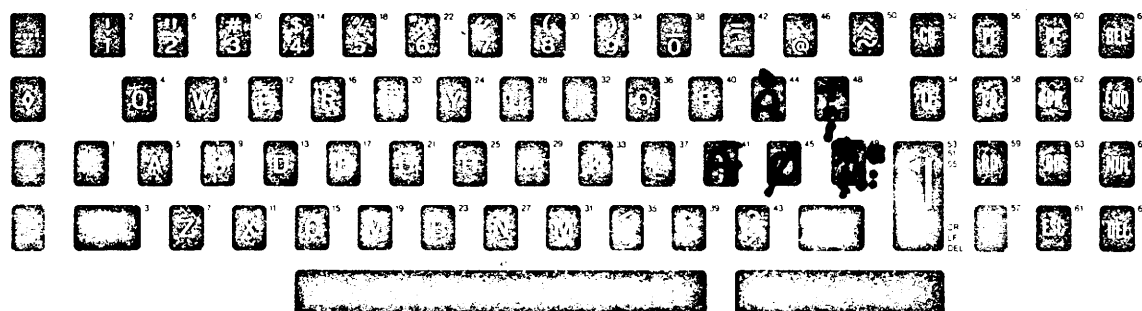
The capacity of 67 keys therefore can be used in various ways. We show here three typical keyboards:

- Keyboard K 813, capable of generating all 128 ISO characters.
- Keyboard K 806, equipped with New-Line key (see further), with function characters grouped at the extreme right.
- Keyboard K 821, with numeric 10-key keyboard.

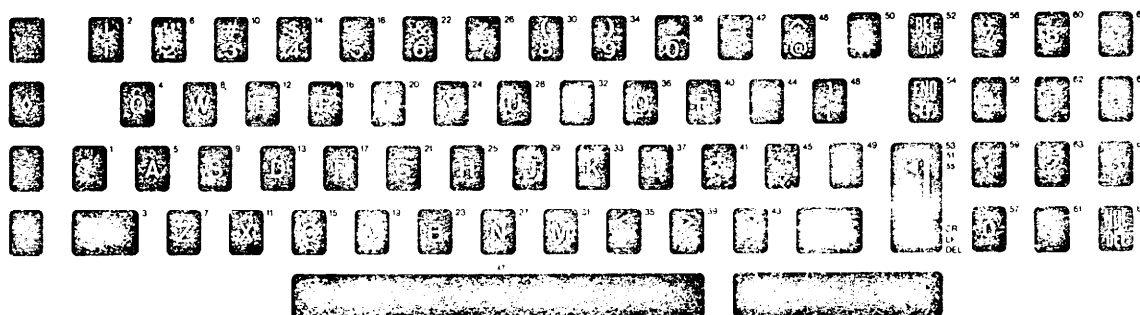
K 813



K 806



K 821



The keyboards of some TE 318 models will not transmit the coding combinations of lower-case letters (columns 6 and 7); in such case each alphabetic key controls two identical coding slides with the capital letter.

To know how many keyboards are available for the TE 318 machines and the characteristics of each one, we must consult the catalog "keyboards" of the Class TE 300.

The physical specifications of the keyboard are the following:

- Average force to operate a key is of 70 grams (about 2 1/2 oz)
- The travel of the key is 4.5 mm (3/16 of in.)
- The distance between two keys is 19 mm (3/4 of in.)
- The distance between rows of keys is 19 mm (3/4 of in.)
- The slope of the keyboard is of 9°.

The keyboard accepts an average entry speed equal to the speed of the machine, i.e. 600 strokes/min.

The linkage controlling the coding slides is however designed to permit the operator to depress two keys with an interval of only 25 milliseconds, equivalent to 2400 strokes/min. If the operator exceeds this speed or if he depresses two keys simultaneously, neither of the two characters is transmitted and the keyboard locks. The operator will then release it by action on the "release" key. During the operation of the Reader or of the Automatic Answer-back, the keyboard is deactivated. The operator may depress the keys but they do not control the serializer nor do they interfere with the transmission in progress. With reference to the three preceding keyboard diagrams, we describe herewith their service keys:



Repeat

This key does not send a specific character and is not included in the previously mentioned total of 67 keys. Its function is to repeat the transmission of the last character entered in the keyboard.



Identification

This key does not send a specific character and is not included in the previously mentioned total of 67 keys. Its function is to release the Automatic Answer-back.



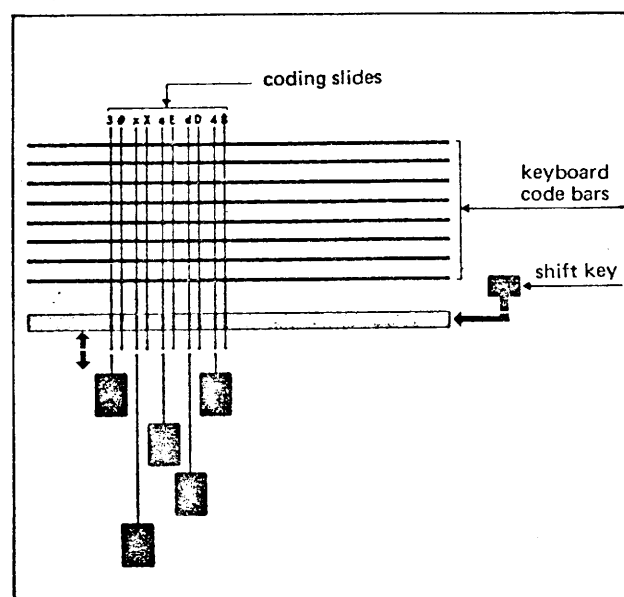
Shift-lock



Shift

These keys are the same as the Capital-Shift and Capital-Lock of a typewriter. The Shift-Lock is located at the left and above the respective Shift key. The Shift-Lock keys may be two, located at either side of the alphabetic keyboard, or may be one only at the left side. These keys do not send characters. With Shift key at rest (in high position) the coding slides of the characters shown in lower part of the key (digits, symbols, lower-case letters) are lined up with the keys. By depressing the Shift key the coding slides of the characters shown in the upper part (symbols and upper-case letters) are lined up with the keys.

This operating system is shown in the following diagram:



Release

It does not send a specific character and is not included in the previously mentioned total of 67 keys. It releases the keyboard when locked by simultaneous double stroke.



Space-bar

It generates the "space" character which causes the printing carriage to advance one space.



New Line

It generates the sequence of three characters, which may vary in different cases. Normally the sequence is composed of three characters: Carriage Return - Line Feed - Delete (CR-LF-DEL). In the Keyboards of machines destined to be connected with Time-Sharing Computers, this key transmits only the character CR (Carriage Return).

The Line Feed will be instructed by the operator with the separate key LF (Line Feed).

All keys which do not relate to the 26 alphabetic signs, to the graphic symbols or to the numbers, are called *Function Keys*.

They are generally grouped at the right side of the Keyboard, except when the numeric keyboard is present. In such case they are between the alphabetic and the numeric keyboard. The function keys generate the characters of the first two columns of the ISO code.

We must clarify the point that the presence of some function keys on the keyboard do not necessarily imply that the machine performs these functions. Quite often they are present because the transmission of the corresponding character to the connected unit (ex. computer) is required. The quantity and type of functions which the machine performs is in direct relation to the model of "Functions Group" with which it is equipped. (See later chapter).

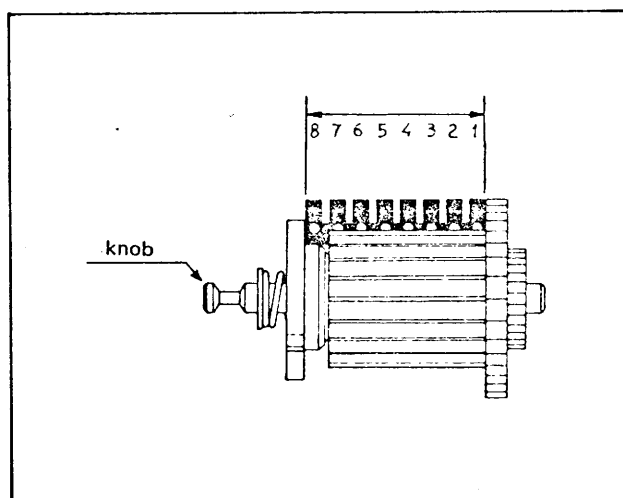
Following is a list of function keys which may be found on a keyboard, together with characters and functions they generate.

Key-top	ISO character	Function
ENQ	ENQ - Enquiry	- Who are you?
BEL	BEL - Bell	- Bell
LF	LF - Line Feed	- Line feed
CR	CR - Carriage Return	- Carriage return
SI opp. PR	SI - Shift In	- Print on
SO opp. ~~PR~~	SO - Shift Out	- Print off
DC2 opp. PE	DC2 - Device Control	- Punch on
DC4 opp. ~~PE~~	DC4 - Device Control	- Punch off
DC1 opp. RD	DC1 - Device Control	- Tape reader start
DC3 opp. ~~RD~~	DC3 - Device Control	- Tape reader stop
NUL	NUL - Null	-
SOH	SOH - Start of Heading	-
STX	STX - Start of Text	-
ETX	ETX - End of Text	-
EOT	EOT - End of Transmission	-
ACK	ACK - Acknowledge	-
BS	BS - Back Space	-
HT	HT - Horizontal Tab	- Space
VT	VT - Vertical Tab	- Line feed
FF	FF - Form Feed	- Line feed
DLE	DLE - Data Link Escape	-
NAK	NAK - Negative ACK	-
SYN	SYN - Synchronous	-
ETB	ETB - End of Transmission Block	-
CAN	CAN - Cancel	-
EM	EM - End of Media	-
SUB	SUB - Substitute	-
ESC	ESC - Escape	-
FS	FS - File Separator	-
GS	GS - Group Separator	-
RS	RS - Record Separator	-
US	US - Unit Separator	-
DEL	DEL - Delete	- DEL key closes the contact which causes the start of the motor

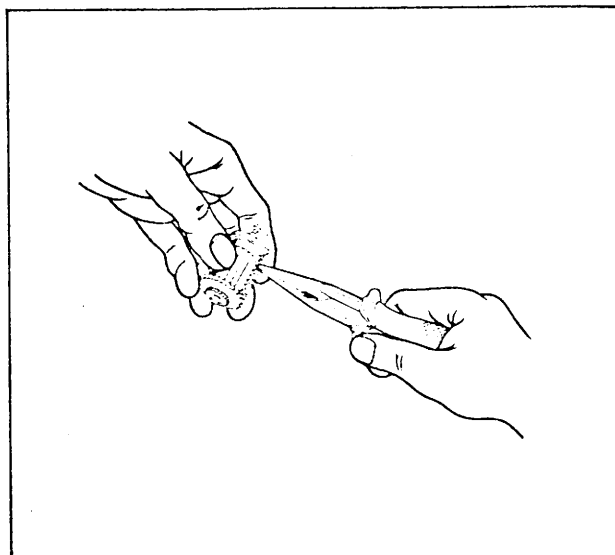
THE AUTOMATIC ANSWER-BACK

The Automatic Answer-back is a 20-character memory which can be programmed by the operator. It consists of a drum with 20 notches in which as many lugs are inserted.

Each lug represents a character and is made with 8 teeth which can be removed according to the character which has to be sent. The lug shown in the following table corresponds to the character 00000000 (NUL)



A lug without any teeth (which in this case would not be mounted on the drum) corresponds to the character 11111111 (DEL). The removal of the teeth is made by an ordinary pair of pliers. The holes located in the slug facilitate the breakage.



The lugs are inserted manually in the corresponding notches and are secured by the movable flange which must be rotated until the locking position is reached.

The whole drum can be removed manually from its seat by simply exerting pressure on the button and pulling out.



To reach the Answer-back drum it is necessary to remove the keyboard cover.

Operation

The Answer-back may be obtained in two ways:

a) Off-line

By depressing the Identification key , the drum starts moving and advances step by step. At each step eight sensing levers read the configuration of the slug and transfer it to the serializer, which in turn sends on-line the corresponding character.

The drum will stop after the 20th character (one turn of the drum) has been read.

b) From the correspondent (On-line)

If the machine receives a character ENQ (Enquiry), the function group recognizes it and causes the start of the drum which performs the same operations described above.

Normally the function group is programmed so that the ENQ character performs this instruction only if received from a correspondent and was not sent from keyboard.

In machines connected on-line the Answer-back is used to give, when requested, its own identification to the correspondent, in order that the caller is sure to be connected with the requested machine even in the absence of the operator of the called station.

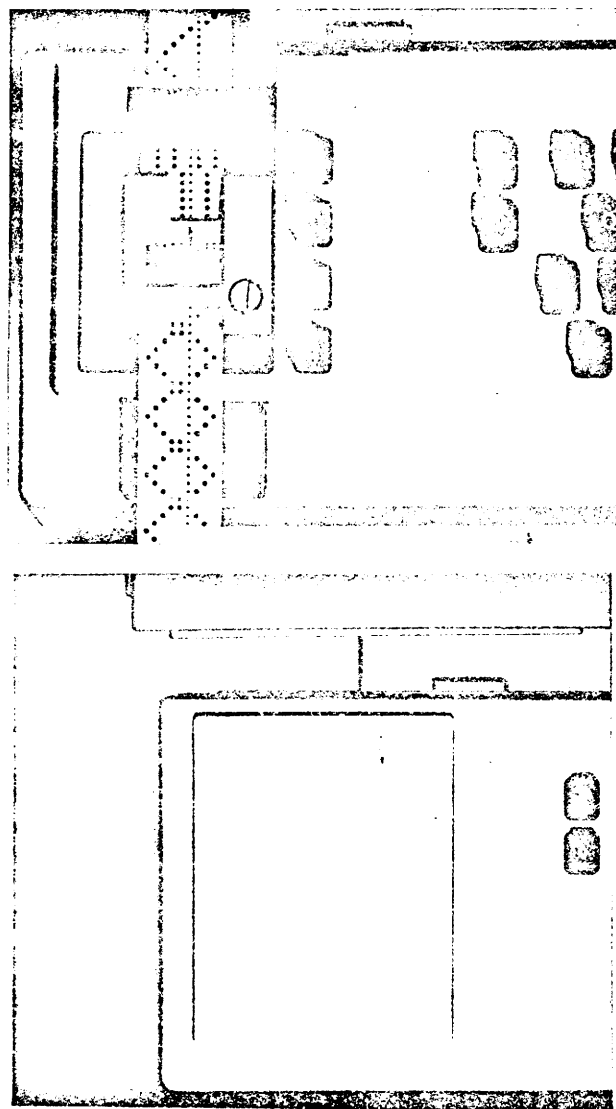
In machines operating off-line, the Answer-back may be used for any fixed data, with a maximum capacity of 20 characters, which has to be recalled and printed repetitively in a text.

During the operation of the Answer-back the keyboard is not linked to the serializer and consequently eventual entries in the keyboard are ineffective. In this way we avoid the transmission of the Answer-back may be interfered with by any operator's entry on the keyboard.

THE TAPE READER (Se 308/1)

The tape reader is an optional group. Any machine, even if ordered without the reader, is present for a later mounting of the reader.

The reader is located on the left side of the keyboard. In the event there is no reader, its place is covered by a plate.



The reader reads punch tape of 1 inch width. The dimensional characteristics of the tape and of the perforation must be in accordance with the proposed ISO Standard # 1671. The main characteristics are listed in Appendix 3 (Supplies) of this manual.

A tape of chadless type cannot be read.

The reading is of mechanical type and takes place by eight sensing needles which at each step are pushed against the tape. The ones which find a perforation are able to travel a certain distance, the others are stopped by the tape.

The position of these needles (high or low) is transferred to the serializer which controls the impulses on line. The reader has the following four function keys, starting from the upper one:



Push button for raising reader head.

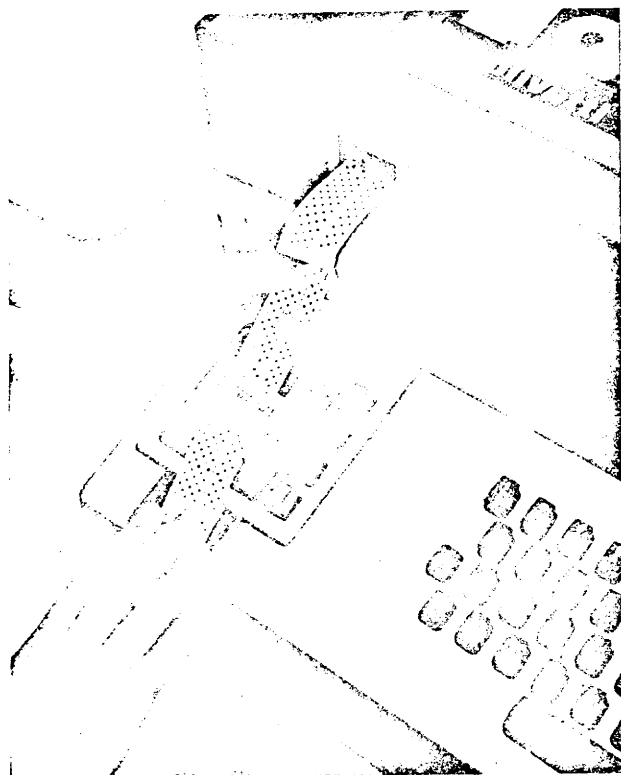
By depressing it the whole reader head is raised permitting the lateral insertion of the paper tape (from left to right).

The tape must be inserted as shown in figure, being careful that it passes under the red bar which controls the tautness of the tape. The small notches on the upper and lower part of the plate facilitate the centering of the tape with respect to the axis of reading.

Once the paper tape is centered, depress the head which will remain locked in a lower position ready for operation.

The reader first reads and then advances the tape and therefore the character read first is the one located on the reading axis.

Note that the shape of the head is such as to permit the view of the perforated character which is located on the reading axis.



Reader "stop" button

By depressing it the reading stops.



Reader "forward" space button

By depressing it the reader one character only.



Reader "start" button

By depressing it the reader will start reading continuously.

- Taut tape

If for any reason the tape is jammed and therefore cannot advance, the red bar, under which the tape is threaded, is pushed upward causing the stoppage of the reader.

- End of tape

A ninth needle sensing the presence of the tape is located on the same axis of the eight sensing needles. When the tape ends, this needle rises causing the stoppage of the reader.

In the event of jamming of the tape under the reader head, the plate may be removed by unscrewing the big screw visible in the figure.

- Automatic stop

The reader may be programmed to recognize one or two special characters and to stop on them (the following character will not be read). The programming of these characters will be made during the assembly. Normally the reader is supplied with program for automatic stop on character DC 3 (Se 308/1). Different characters of automatic stop are indicated by the last digit of the model (Se 308/2, etc.). The catalog of "Product Cards" may be consulted for the different automatic stops available.

During the reader's operation the keyboard is not connected to the serializer. Any stroke is therefore ineffective and does not interfere with the reader's output.

THE SERIALIZING GROUP

Serialization

As seen in previous chapters, informations to be sent on-line may be originated in three distinct groups: the keyboard, the Automatic Answer-back, the Tape Reader. All three groups converge in a single point and control a common group of *eight serializing bars*. The purpose of the *serializer* is to sense each one of these bars individually and instruction the *sending contact* which is connected to the line by filters. The sending contact

consists of a movable contact between two fixed terminals and can transmit with both single and double current according to the polarity of the connections.

The distortion stability of transmitted signals is of 5 to 7%.

With reference to the table of ISO code, the serializer serializes the bits in the following sequence:

Start - b1 - b2 - b3 - b4 - b5 - b6 - b7 - b8 (parity) - Stop.

Send-Receive Switch

The serializing group controls also a second contact which is called Send-Receive Switch, which operates during transmission of signals and returns to a rest position at the end of transmission.

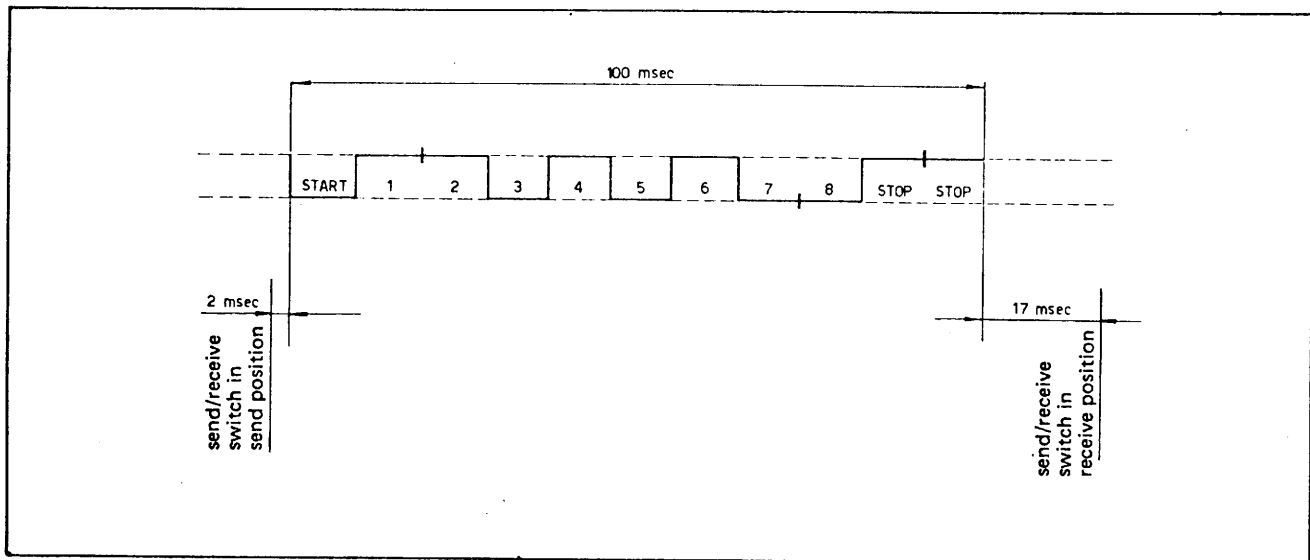
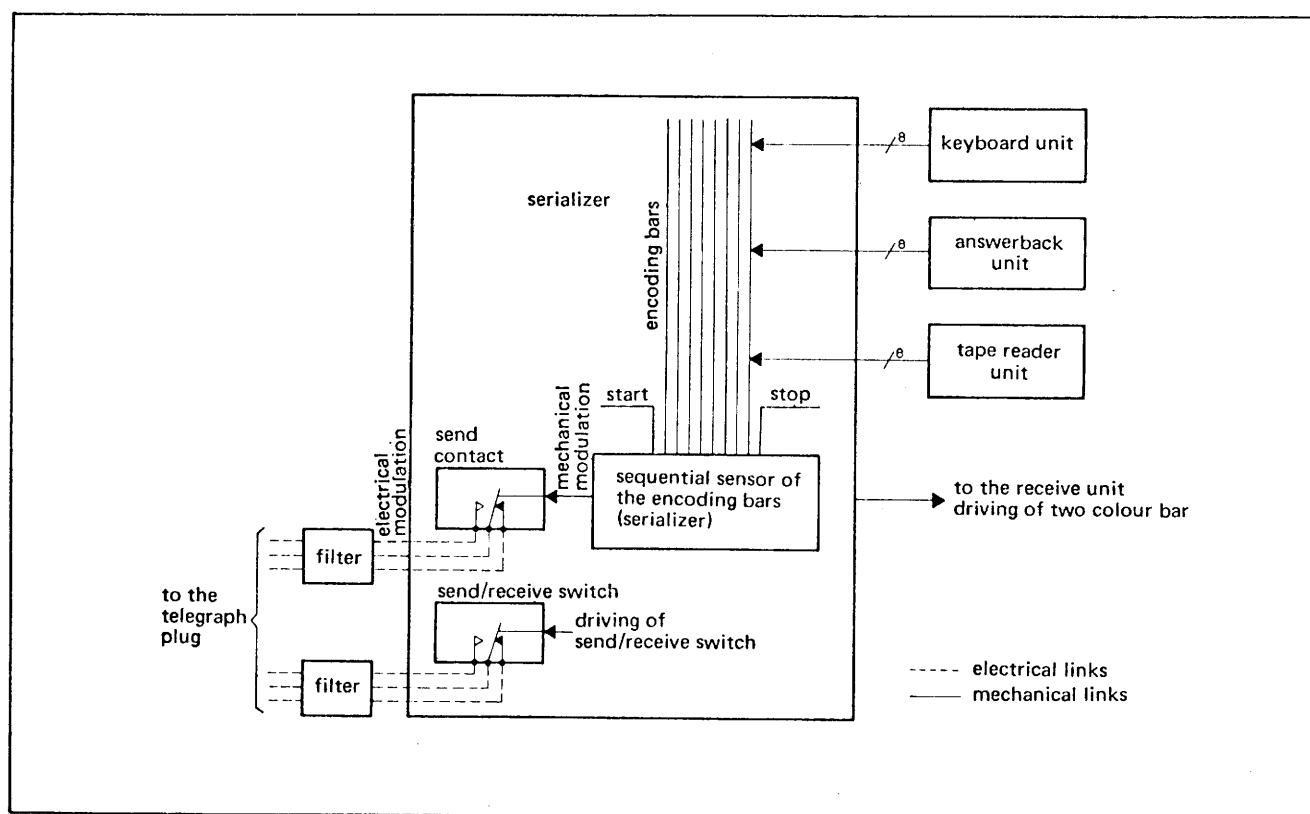
This switch is used to connect the machine on telegraphic circuits operating on double current. The most usual connection is the one called "Connection in Semi-Duplex with 4 lines with local control".

Bicolor control

The printing group of the TE 318 provides for the characters received from a correspondent to be printed in black, while the characters received from its own keyboard or reader or automatic answer-back to be printed in red (or vice versa if the spool of the ribbon is inverted).

As soon as the serializer is moving, it sends a signal of "Machine in Transmission" to the receiving part, in order that it is present to print in red.

In the event that we wish to operate in "full duplex blind" this connection must be cut off.



THE RECEIVER

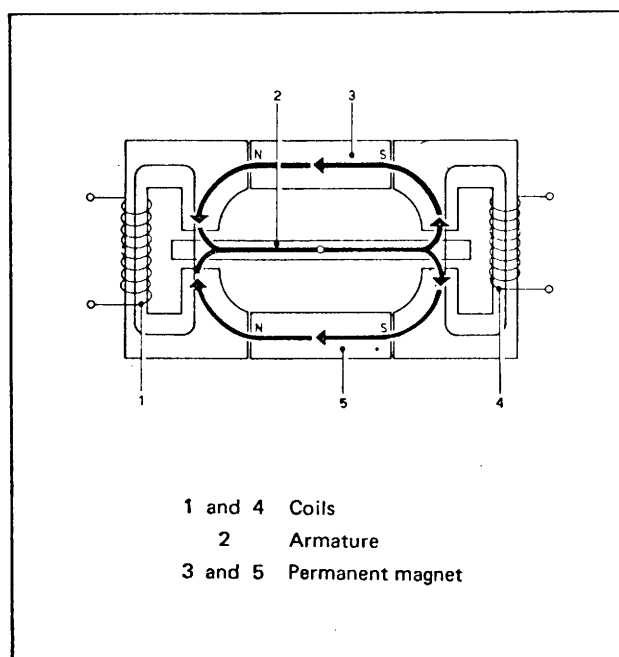
THE DESERIALIZING GROUP

The purpose of the deserializer is to accomplish exactly the opposite operation of the one performed by the serializer, that is to receive the impulses from the line, sense them one by one, and transfer them in parallel on the selector bars to which the three groups of printing, perforation and function recognition are connected.

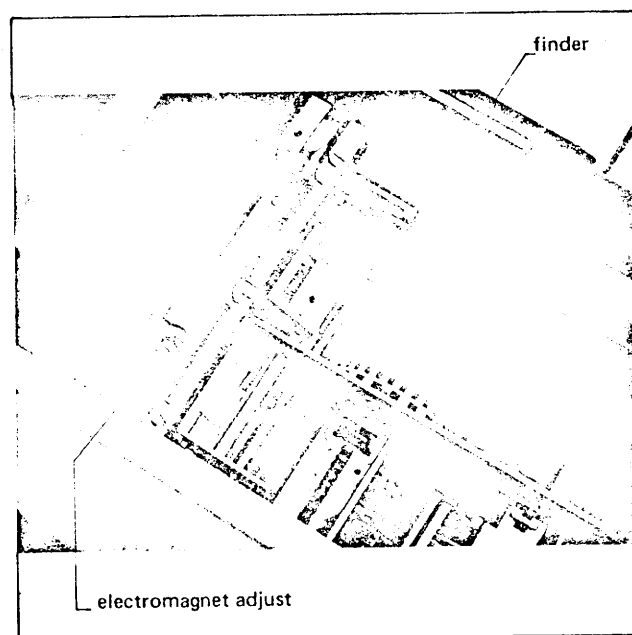
The deserializing group consists of the following:

The receiving electromagnet.

Its function is to transform the serial electric pulses into movements of its mobile cam. This electromagnet is polarized and therefore can receive signals in both single and double current. The diagram of the magnetic circuit is shown in figure. The switch from double current ope-



ration to the single current one is obtained by turning a graduated knob which exerts a tension on a spring.

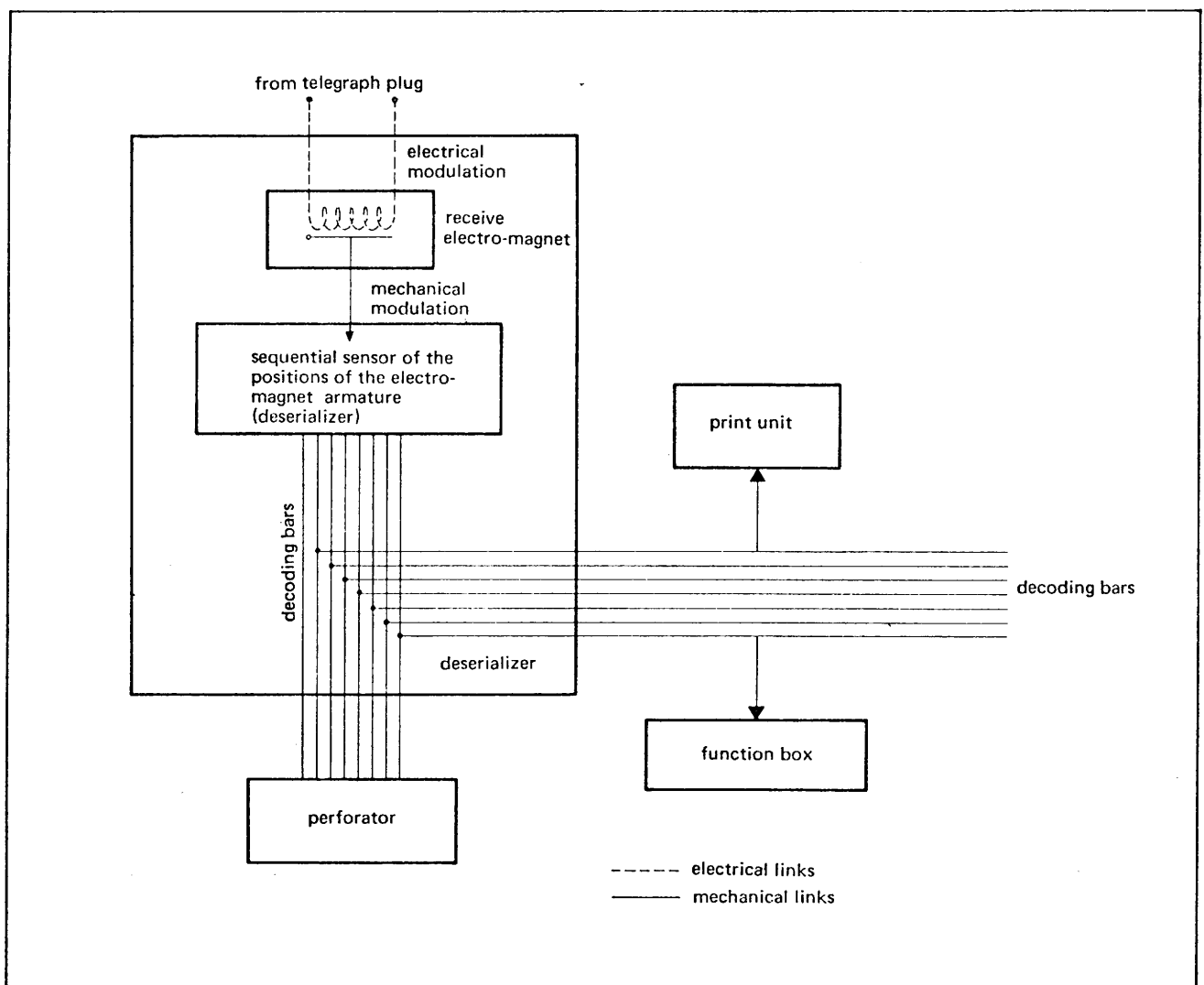


See Chapter, "Telegraphic System" for the electric specifications of the electromagnet.

The Distributor

Upon reception of the start impulse (beginning of a signal), the electromagnet starts the distributor rotating. This is a device that tests in succession the positions reached by the mobile cam and then memorizes them.

Upon reception of the stop impulse (end of a signal) these eight positions are transferred in parallel to the selector bars of the deserializer.



Orientation Device

Since the orientation may be distorted, that is not all impulses are located in the exact (theoric) distance from the starting place, it is possible to vary the instant of sensing (in order to center it in the

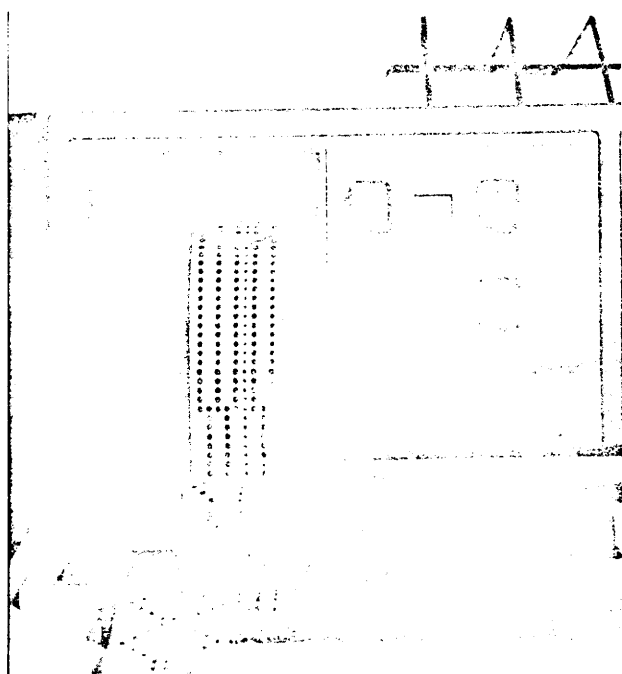
best position) by rotating a special graduated know (phasing or orientation device).

The margin of reception to synchronism is of 30%, that is the machine may receive correctly signals distorted up to 30%.

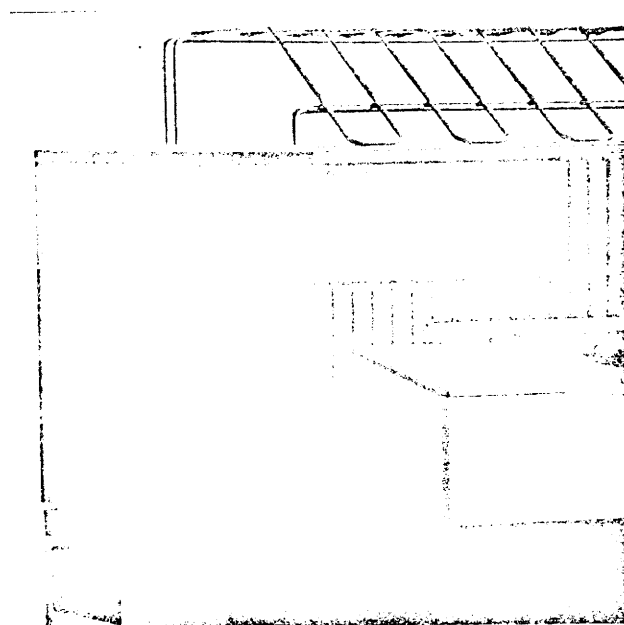
THE TAPE PERFORATOR

The tape perforator is an optional device. Any machine, even if ordered without perforator is preset for its subsequent assembly.

The perforator is located in front of the operator on the left part of the machine and is aligned with the tape reader.



When the perforator is missing, its place is covered by a plate. The same applies to the two openings on the left side of the cabinet provided for the input of the punch tape and the discharge of the chads.



The perforator punches paper tape 1 inch long. The physical and dimensional specifications of the tape to be punched must be acceptable to the provisional ISO Standard # 1729. The specifications of the punched tape must be in accordance with the provisional ISO Standard # 1671. The main specifications are listed in Appendix 3 of this Manual.

The eight punchers are connected to the eight selector bars of the deserializer. Positions "0" or "1" of each bar determines if the respective puncher will perforate or not.

Upon reception of each character a device pushes against the paper tape all selected punchers as

well as the punches which perforate the hole of tracking. After perforation the tape advances one space (1/10 inch).

The perforator has five function keys located on the cabinet:



Perforator "On"

All characters received by the machine are punched, except the ones for which absence of perforation is programmed in the function group (See description of Function Group).



Perforator "Off"

No character is punched.



Tape "run-out"

The perforator continually punches the last received character at the nominal speed of the machine (10 ch/sec.). This operation will continue as long as the key is kept depressed.



Back-space

The perforator back-spaces the tape one space without punching.



Tape Release

By depression of key the tape is released from the feeding sprockets and can be easily disengaged by pulling it out.

An indicator in the control panel shows "red" if the perforator is switched on and "green" if it is excluded.

If programmed in the function group, the perforator may be included and excluded upon recep-

tion of two characters provided for this purpose. The two characters which are generally used are:

On = DC2

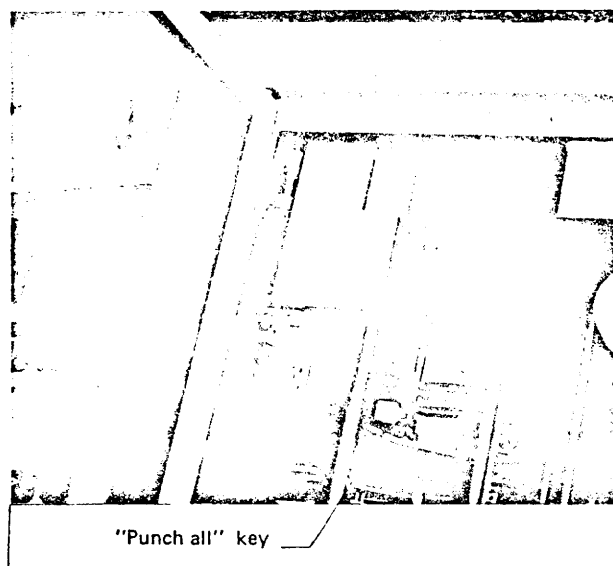
Off = DC4

Note that:

- If the perforator is "off" the Code DC2 is not punched.
- If the perforator is "on" the Code DC2 is punched.
- If the perforator is "on" the Code DC4 is punched.

The use of this operating logic is described in Appendix 2 of this manual.

For some applications it may be required that the perforator not be subject to coded or manual instructions for switching it "on" or "off". This mode of "Punch all" may be obtained by pulling the green lever upward which is located in the perforator in the position shown in figure.



The paper roll and the chads are contained in two transparent plastic supports attached to the left side of the cabinet. The distance that the ape must travel to reach the insertion in the perforator is shown in figure. By pressing on the insertion plate the two feeding sprockets open and the tape can be inserted and threaded until it comes out from the frontal opening.



THE SELECTOR BARS

The selector bars are connected to the deserializing group through a device which positions them and they are arranged along the whole width of the machine.

There are 10 selector bars divided as follows:

- 7 *coding bars* for the 7 significant bits.
- 1 bar whose position will depend on whether the machine is in Receive or Send mode. It is usually called "*Bicolor bar*".
- 1 *Excluder Bar* which instructs the function group whether to perform all functions or not.
- 1 *Print Bar* which determines whether the print section must print the code or not.

Note that the eighth bar of the deserializing group (parity bit) is connected only to the perforator.

THE PRINT GROUP

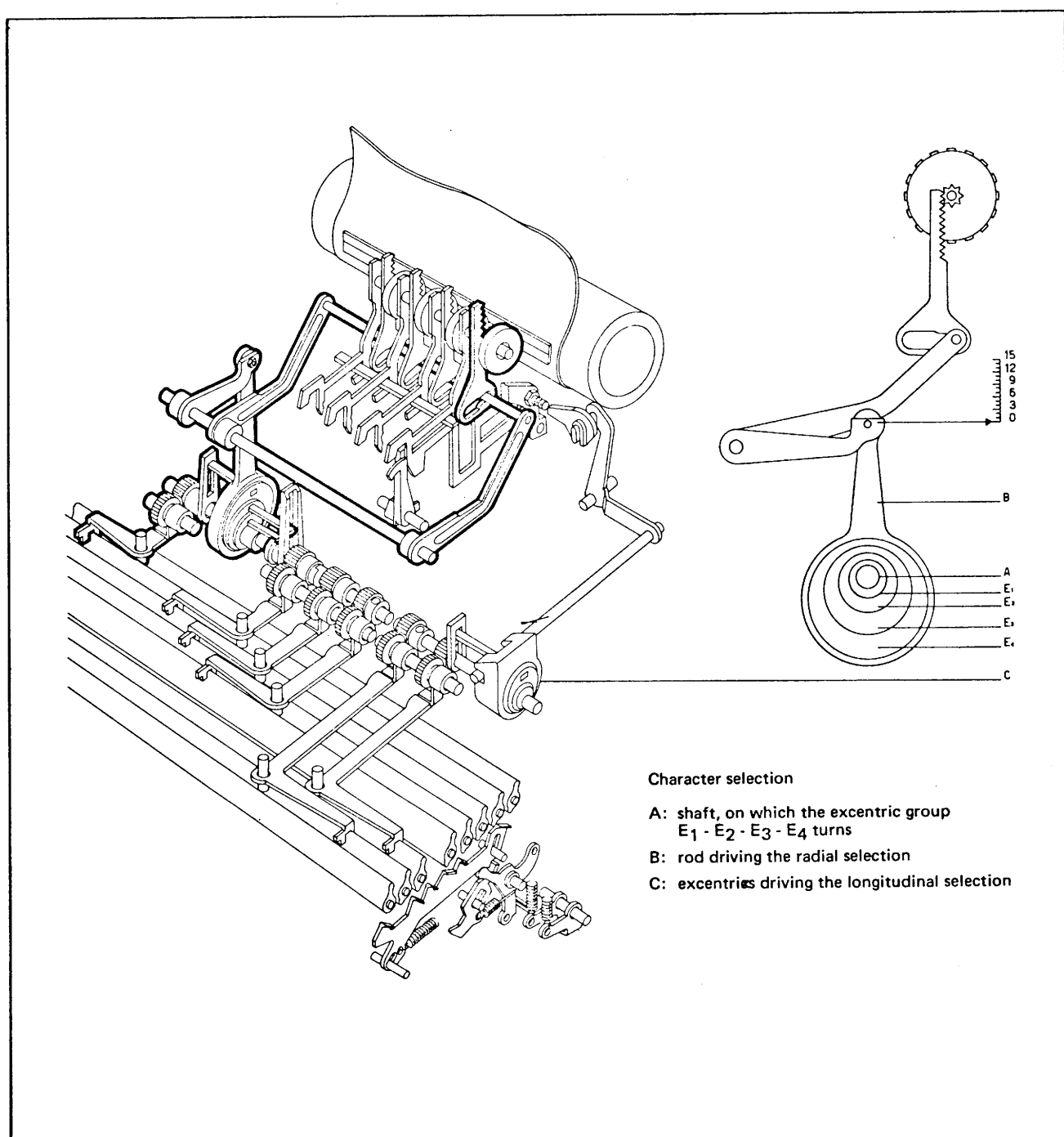
The print group consists of a mobile carriage on which the print and type selector units and the ribbon spools are assembled. It travels across the width of the machine on three parallel rails.

The printing is obtained by four or six type-wheels each one bearing sixteen characters for a total of 64 or 96 characters.

In the case of four type-wheels, the characters are those listed in rows 2-3-4-5 of the ISO code of the selected national type. The position corresponding to the "Space" character is never used in printing and therefore the characters actually printed are 63.

In the case of six type-wheels, the "small" letter characters of columns 6 and 7 are added. The printing characters are really only 94 since the positions corresponding to the "Space" and "Delete" characters are not used in printing. Each model of type-wheel is identified by the letter P, followed by a 3-digit number. For example, P-803 identifies the 4-wheel group with characters of USASCII (without small letters); P-804 indicates the 6-wheel group with characters USASCII (with capital and small letters). The list of all groups of available type-wheels is to be found in the catalog "Printing type-wheels of the TE 300". In the lower part of the type-carriage are located 8 or 9 forks (respectively for machines with 4 or 6 type-wheels) which connect with as many selector bars (7 coding + 1 bicolor + 1 print bar).





A diagram of the operation of the device for selection and printing is shown in page 30.

Two selecting operation sare carried out together when each character is printed:

- "Angular selection" whereby the group of wheels is rotated so that the character desired is brought into the printing position.
- "Lateral selection" whereby the group of wheels is moved laterally so that the wheel which carries the desired character is brought in position with the printing axis.

The selection is obtained by means of eccentric discs which rotate within the base of a connecting arm.

The angular selection is done by means of four eccentrics, each one connected by a rod to the four coding bars provided for angular selection. Each disc may be moved to a "high" or "low" position according to the information "1" or "0" of the coding bar to which it is linked. Each one of the four discs raises to a different level the connecting rod which controls the rotation of the type-wheels:

- E1 raises it up to level 1
- E2 raises it up to level 2
- E3 raises it up to level 4
- E4 raises it up to level 8

The connecting rod (B) which accumulates the sum of the simultaneous movements of the four eccentric discs can therefore be raised to any of the 16 levels (0 to 15) thereby turning the type-wheels by means of a rack.

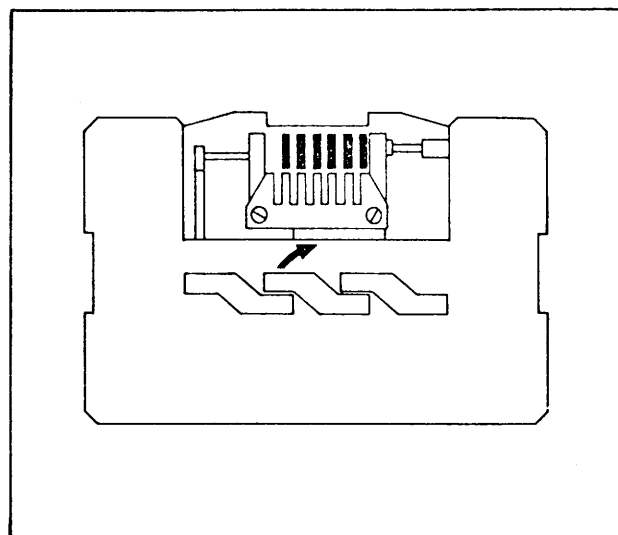
The lateral selection operates in a similar way: Models with 4 printing wheels use two eccentric discs of value 1 and 2 which result in 4 positions; Models with 6 printing wheels use three eccentric discs of value 1-2-2 which result in 6 positions. For angular selection, bits 1-2-3-4 are used. For lateral selection bits 5-(6)-7.

In 4 type-wheel machines bit 6 is disregarded and therefore all small letter characters received by the machine are automatically printed in capitals.

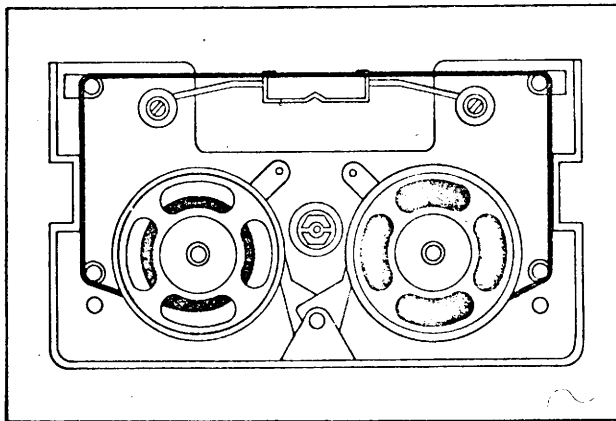
The *Print Bar* advises the printing carriage whether the desired character must be printed or not. In case of printing the selected wheel is pushed forward against the inked ribbon and the paper.

The *Bicolor Bar* advises the printing carriage whether the selected character must be printed in red or in black and according raises the ribbon partially or completely (Red = trasmitted character - Black = received character on line). The TE 318 uses standard typewriter ribbon spools, are contained in a cartridge situated on top of the printing carriage, which can be easily reached by raising the upper doors of the machine.

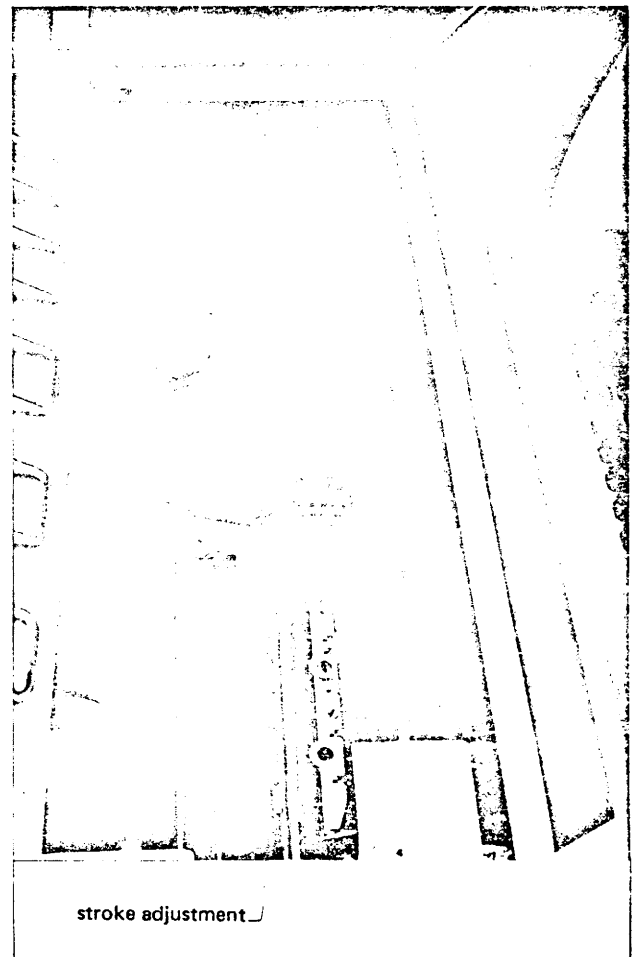
The cartridge can be easily removed by manually turning the locking key and the spools extracted by moving two levers and detaching the ribbon from the guide.



The direction in which the ribbon unwinds is indicated by arrows on the cartridge. If a complete replacement ribbon cartridge is available, the operation of changing ribbon can be simplified by inserting the whole new cartridge. The ribbon reverse control is sensitive to the



clips at the ends of the ribbon as well as, in the absence of clips, to the tension of the ribbon occurring on the side of the empty spool. Spool having 5 or 6 mm ($1/5''$) interval diameter of the central opening may be used. The stroke impact may be controlled by a lever situated on the left side of the printing carriage.



The number of obtainable copies varies according to the quality of the paper used and to the sensitivity of the carbon paper. By using standard multi-copy paper rolls with interleaved carbon paper of medium sensitivity, we will obtain 5-7 copies.

- The pitch is 1/10" (10 char/inch)
 - The maximum writing line is of 80 characters.
- The machine uses the "Square" type shown below:

Character style : "quadrato"

1234567890

ABCDEFGHIJKLMNPOQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

THE PLATEN AND THE PAPER CONTROL GROUP

The standard type of TE 318 provides for paper-feeding by continuous roll. As mentioned previously, it provides also for optional paper support equipped with Sprocket feed device.

The different models of platens are identified by the letter R followed by a 2-digit number. The standard platen described below is the R 01.

The width of the platen permits the insertion of paper with maximum width of 9 1/2" (241 mm) for a total of 80 effective spaces.

Normally the machine is set-up for 72 spaces except if otherwise specified) and for use of 210 mm (European Standard) or 216 mm (8 1/2" - USA Standard) paper.

When the printing carriage reaches the last effective space, a device blocks the advancement and the stroke.

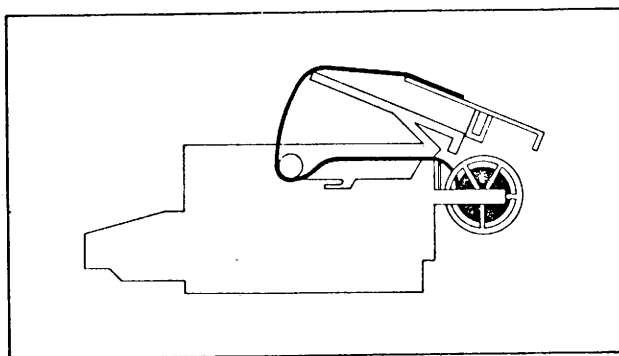
Margins

The left margin of printed sheet (distance between the edge of the sheet and the axis of the first stroke) is pre-set at 17.8 mm (about 3/4 of an inch).

The right margin is of course dependent upon the number of spaces for which the machine is programmed in relation to the width of paper used. Before the insertion under the platen, the sheet is guided by two guides. The left one is fixed, the right one can be adjusted according to the paper-width.

Paper Roll

The paper support, attached to the outside of the cabinet, can accept rolls with external diameter up to 170 mm (7") (standard rolls are 4 3/4") and inside diameter of 25 mm (1"). The left flange of the paper support is fixed, the right one adjustable according to the various width of the paper.

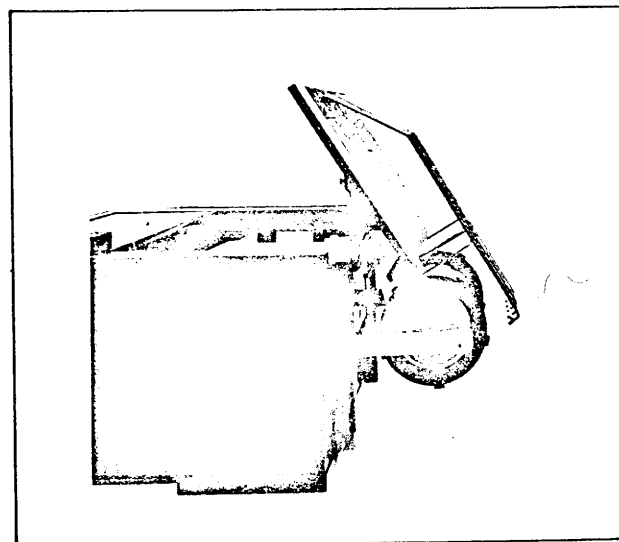


Platen Control Levers

Two levers situated at the sides of the platen will control respectively:

- The platen Release to allow the operator to rotate the platen in both directions.
- The Paper Release, i.e. the forward movement of the Paper Rollers which exert the pressure against the platen, to provide for easy insertion or centering of the paper.

These two levers, when left in open position, close automatically upon the first line space instruction.



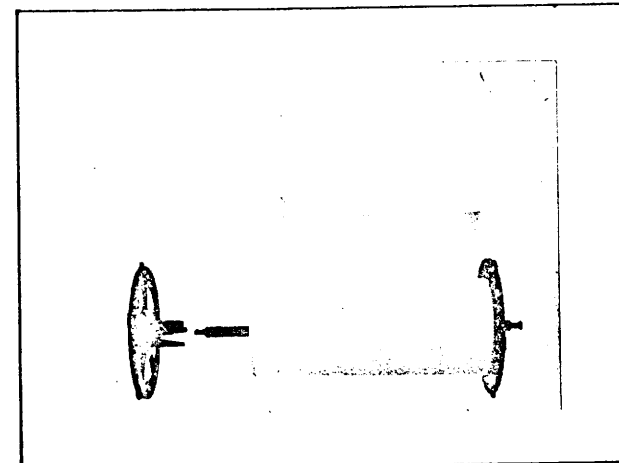
Variable Line Feed

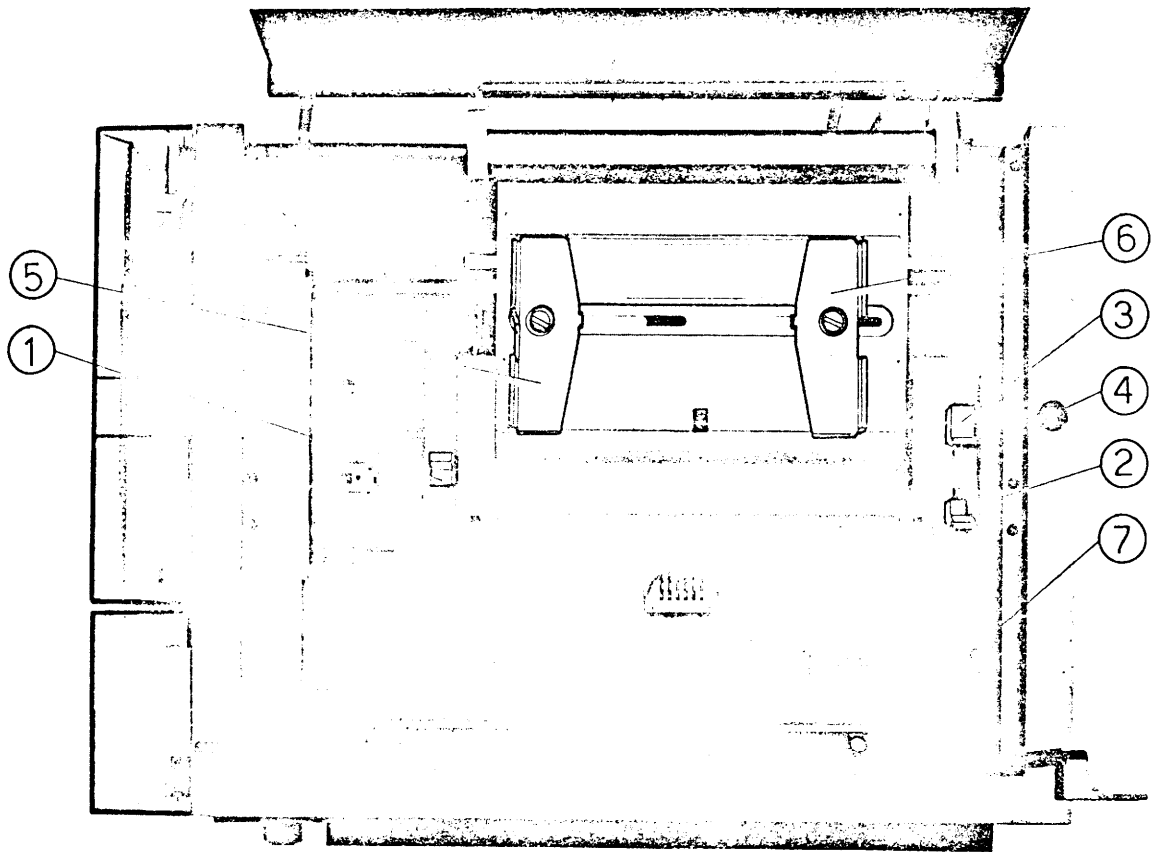
The Variable Line-Feed (Vertical Spacing) may be adjusted by the operator for $1/6''$ - $1/4''$ - $1/3''$ line space by moving the lever situated at the extreme right of the platen.

A button protruding on the upper part of the casing (Continuous Paper Feed) activates the continuous paper feed and the carriage return without signals being sent. This button controls also the start of the motor if the latter had stopped due to intervention of the time-switch.

Adjustable Bell Trip

The printing carriage activates a bell before reaching the last printing position. The operator can set the position at which the bell will ring by adjusting the slider, reachable by lifting the forward cover of the machine.





- 1 - Print paper release lever
- 2 - Roll release lever
- 3 - Line feed selection lever
- 4 - Manual NL (line feed and carriage return)
- 5 - 6 - Paper guide
- 7 - End-of-line bell adjust

Timing of Carriage Return

The device for carriage movement is based on a pinion with cogs which controls a rack to which the carriage is connected. The forward movement takes place by over-powering a spring which has a constant tendency to return the carriage to the beginning of line.

Upon reception of the "Carriage Return" character, the pinion becomes disengaged and therefore the carriage is returned to the beginning of the line by the spring.

The Carriage Return Timing starting from the 80th stroke is about 200 milliseconds and it is thus possible, with carriage at the 80th space, to receive a sequence of characters: Carr. return - New Line - Print and to print correctly on a new line.

The machine is equipped with a pneumatic brake which acts as a shockabsorber at the end of the carriage return.

Automatic Line Feed

If the machine is in receiving mode (as shown by the bicolor bar), the reception and printing of an 81st character causes the automatic return of the carriage and the vertical line spacing.

(Note that this function takes place with the sending of characters and only if the machine is in receiving mode).

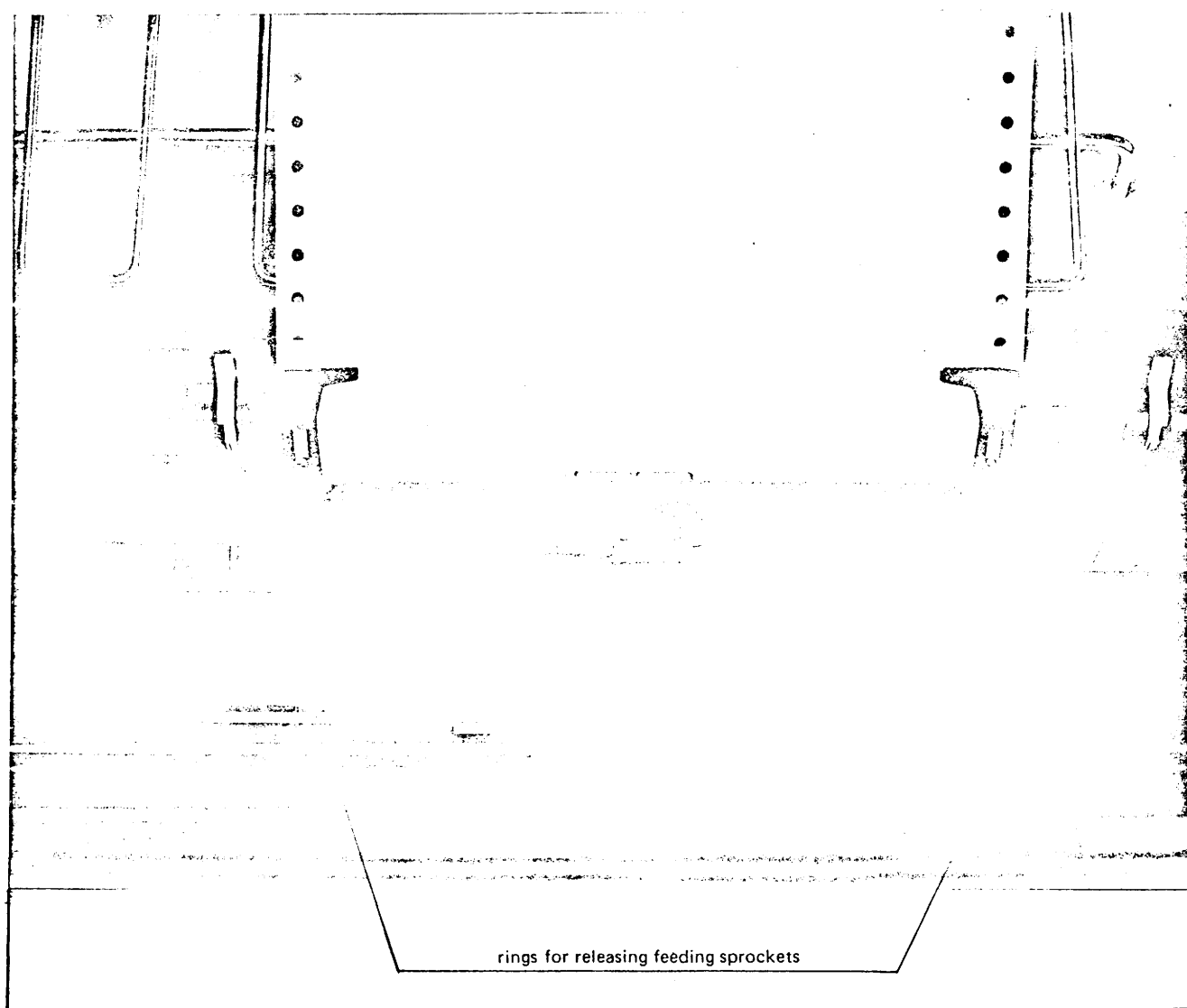
Sprocket Feed Platens

The machine may be equipped with two different types of sprocket feed platens:

- R 02. for forms 8 1/2" wide - Line capacity: 73 spaces
- R 03: for forms 9 1/2" wide - Line capacity: 81 spaces.

The forms have a series of perforations along the two edges, which are grasped by the sprocket teeth which protrude on the sides of the platen. The dimensional specifications of the forms are listed in Appendix 3.

The Paper Release Lever is locked in a "Free" position so that the Paper Bail Rollers are kept out of contact of the platen and therefore the paper feed depends only on the sprockets. When the machine is equipped with sprocket feed platen, two levers (See page 37) permit the manual withdrawal of the sprocket teeth to allow the insertion of the paper. An available optional device is a container for packages of forms, which is described in Appendix 1.



THE CODE RECOGNITION UNIT (Functions Group)

The Code Recognition Unit is the mechanical group devised to sense the configuration of the selector bars, recognize if this configuration corresponds to a function character, and if so, to instruct the unit which will perform the corresponding function. In other words we may say that the Code Recognition Unit is a *mechanical decodifier with 34 programming positions in which the input is represented by the selector bars and the output by instructions for preset functions.*

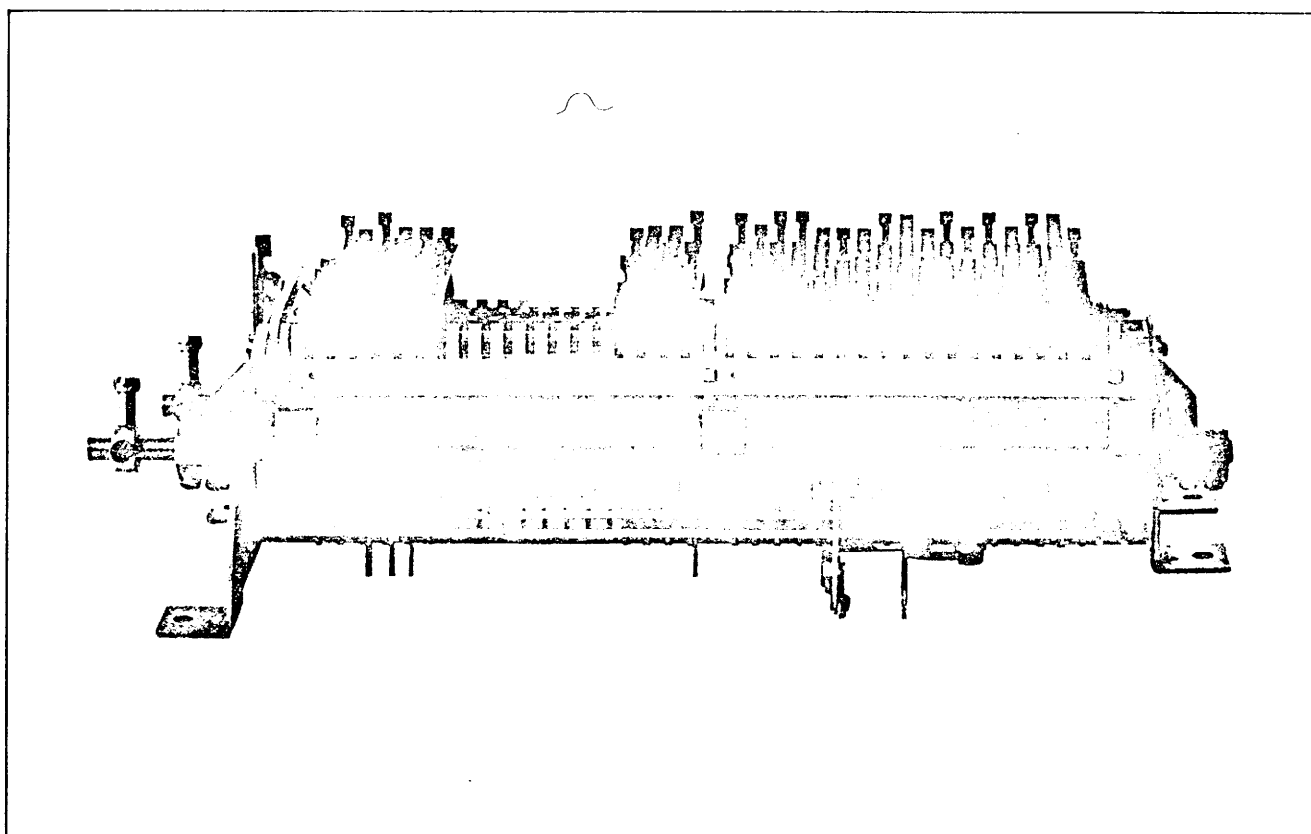
The Code Recognition Unit is a variable part of the machine. The number, the function, the conditioning and the coding of the sensing levers are

variable and are set up during assembly in accordance both with the specifications of a certain type of the basic machine and with the specifications of the system to which the machine will be connected. (See Catalog of Product Cards which refers each system to the machine with the group functions correspondingly correct).

Each Code Recognition Unit is identified by the letter **F** followed by a 3 digit number starting with 8 (F 801 - F 813 - F 815, etc.). The various available Code Recognition Units are listed in a separate publication:

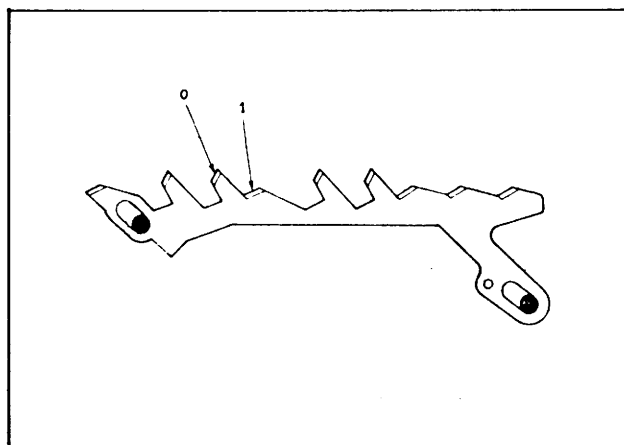
Function Groups of the TE 300.

We are describing below its operating system and general features.



The Operating System

The Code Recognition Unit consists of a metallic cage with 34 slots which correspond to sensing levers (with a theoretical maximum of 34), each one having a special profile representing the particular character which it must recognize. The



various slots correspond to the actuator linkages for the various functions.

As each character is received the sensing levers sense the lower part of the selector bars.

- The sensing levers having a different profile from the profile of the selector bars are stopped by the latter.

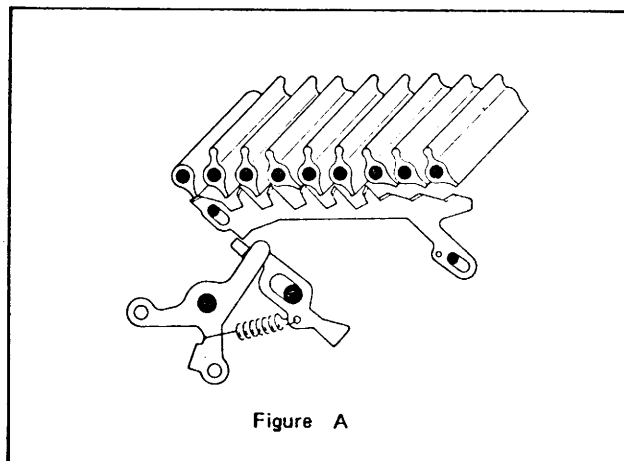


Figure A

- The sensing lever having a profile which matches the character of the selector bar travels more deeply between the bars.

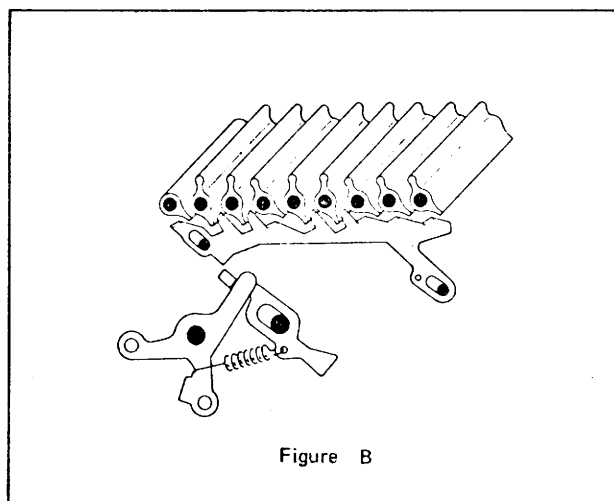


Figure B

Figure A indicates the position of bars which does not fit the profile of the sensing levers.

Figure B indicates the position of bars which matches the profile.

The sensing levers are then retracted to a rest position and the one which has performed a longer travel on its return journey operates the actuator linkage which causes the performance of the function corresponding to the recognized character. So, for example, if the recognized character is Line Feed, it will disengage a service linkage which in turns will rotate the platen; if the recognized character is an external instruction, it will operate a micro-switch. In special applications the Code Recognition Unit may be programmed to recognize also a *sequence* of two or more characters.

Functions Performed

The functions operated by the Code Recognition Unit may be divided into two categories:

a) *Functions performed mechanically:*

They all refer, without exception, to instructions to a mechanical unit of the machine. They are:

- Space
- Carriage Return
- Line Feed
- Release of Automatic Answer-back
- Bell
- Perforator "ON"
- Perforator "OFF"
- Print
- Non-print

Each recognized character may instruct, beside its own characteristic function, also the cut-off of the following functions:

- Advancement of carriage
- Print
- Punch

Note that these cut-offs relate only to the character in question and not to the following ones, while the functions previously listed for Non-Print and Perforator "OFF" are permanent and valid until an apposite instruction is received.

b) *Functions performed electrically*

The recognition of a character causes the operation of a microswitch of the dry-reed type, which can be inserted on a circuit of operation for a function which is inside or outside the machine.

A typical function of the first type is the (optional) "Start Reader". We will remember that in this case the circuit power supply, of which the contact of the Code Recognition Unit is a part, is generated by an auxiliary unit. An example of the second type is when the microswitches control functions in periph-

eral units which will be described in other manuals.

Note that the same sensing lever may instruct at the same time the performance of a mechanical function and the operation of a micro-switch.

Conditioning

The code recognition and therefore the operation of a given function may be "conditioned" by the status 0 or 1 of the following informations, represented by as many selector bars:

a) *7 bars corresponding to the significant bits of ISO code.*

b) *1 Send-Receive Bar (Bicolor Bar)*

A function can be operated only if either the corresponding character is sent by the transmitter (Keyboard, Automatic Answer-back, Reader) or if it is received from the correspondent or in both cases (function not conditioned by bicolor bar).

A typical case of operation of such information is with character ENQ (release of Automatic Answer-back). If sent from Keyboard, it will not be decoded, if sent by correspondent it will be decoded and will operate the release of Answer-back (it is called a function "conditioned on reception").

c) *1 Suppression Bar*

This bar is moved to position 1 (rest position) by the code SI (Shift In) and in such condition the bar has no effect as if it would not exist.

It is moved to position 0 (suppression position) by code SO (Shift Out) and in such position it will exclude:

- the Print
- The carriage advancement
- The performance of all functions for which we have conditioned such bar.

In the following table we have tested for example the functions and the conditions of the Code Recognition Unit F 815 which is one of the most common ones.

CHARACTER								NAME	SEQUENCE	CONDITIONS	OPERATION SUPPRESSED	ELECTRICAL OUT-PUT	FUNCTION PERFORMED
6	5	4	3	2	1	7	6						
0	0	0	0	1	0	1		ENQ			no punching		
0	0	0	0	1	0	1		ENQ		receive	no punching no printing no spacing		Trips the answerback
0	1	0	0	0	0	0		SP			no printing		Space
0	0	0	1	0	0	1		HT			no printing		Space
0	0	0	1	0	1	0		LF		print on	no printing no spacing		Line feed
0	0	0	1	0	1	1		VT		print on	no printing no spacing		Line feed
0	0	0	1	1	0	0		FF		print on	no printing no spacing		Line feed
0	0	0	1	1	0	1		CR		print on	no printing no spacing		Line feed
0	0	0	0	1	1	1		BEL			no printing no spacing		The bell rings
0	0	1	0	0	0	1		DC1			no printing no spacing	●	Closes a contact
0	0	1	0	0	1	0		DC2			no printing no spacing		Perforator is included
0	0	1	0	0	1	1		DC3			no printing no spacing	●	Closes a contact
0	0	1	0	1	0	0		DC4			no printing no spacing		Perforator is excluded
0	0	0	1	1	1	1		SI			no printing no spacing		Printing and spacing are included
0	0	0	1	1	1	0		SO			no printing no spacing		Printing and spacing are excluded
1	1	1	1	1	1	1		DEL			no printing no spacing		
0	0	-	-	-	-	-							
Functions not included in the list													

ELECTRICAL LAYOUT

GENERAL DESCRIPTION

The TE 318 is supplied with two basic electrical systems: the telegraph circuit and the motor circuit, plus a third one of auxiliary services, which supply the optional devices of the machine.

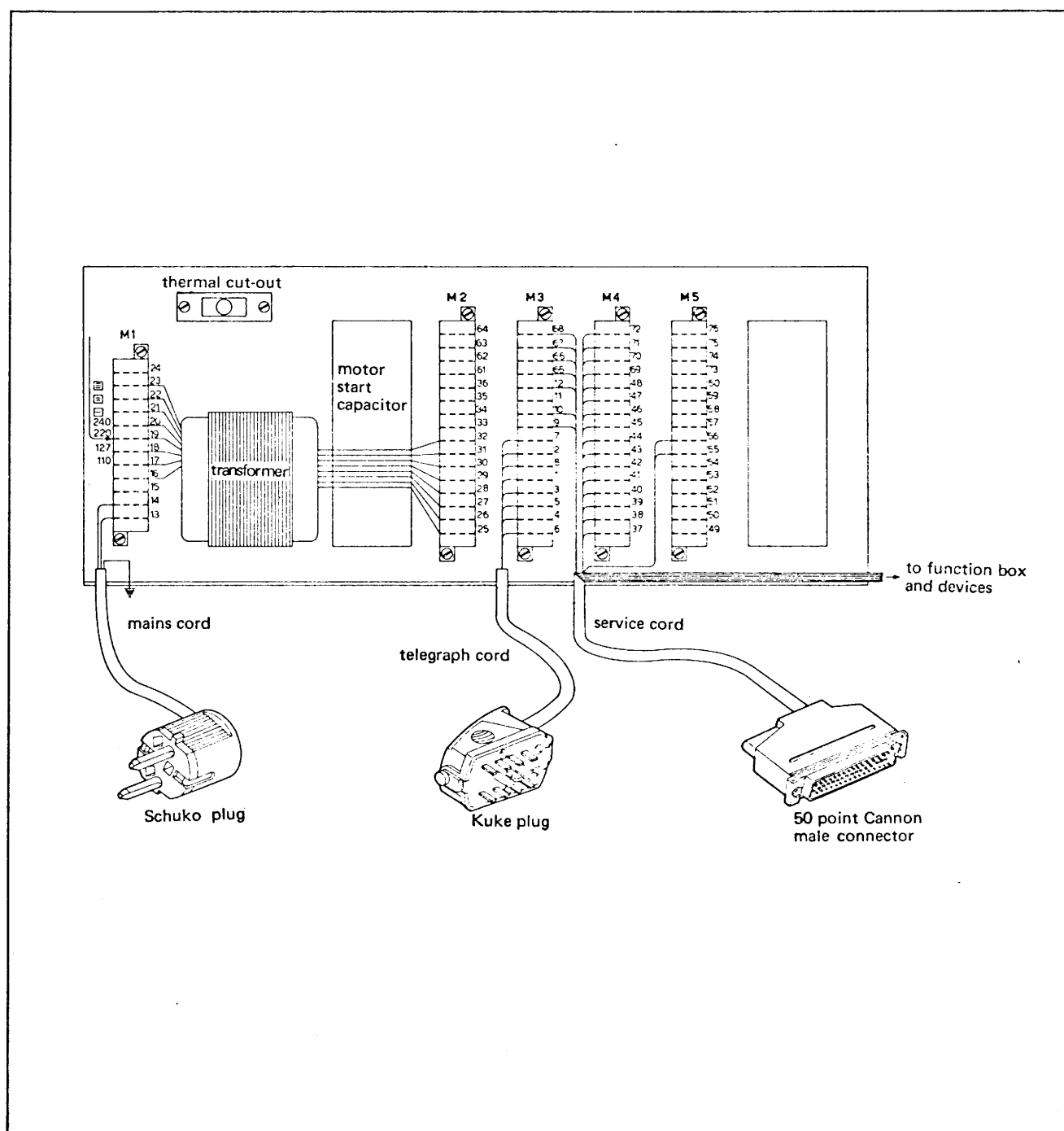
- The telegraph circuit connects the interface units of the machine (Send and Send/Receive switches, receiving electromagnet) with the line. An 8-wire cable (telegraph cable) with Kuke type plug is connected to an external power supply unit or to the connector unit mounted at the rear of the TE 318, depending on the type of connection which must be obtained. Each system of telegraph circuit is identified by the letter T followed by a 2 digit number. The system illustrated herewith relates to send/receive machines and is called T 01.
- The motor circuit supplies the power to the motor through a transformer which permits the adaptation to different currents and is equipped with all necessary safety and controlling devices. It is provided with a 3-wire cable (motor cable) with Schuko type plug to be connected to the connector. This system of motor circuit is identified by the letter M followed by a 2

digit number. In this chapter we will describe either to an external AC power supply unit or the M 02 motor circuit.

- The auxiliary service circuit is used for linking to the connector any device requiring exchange of signals with the outside (i.e. devices which are power-driven or equipped with contacts for signals). It is equipped with a cable (services cable) terminating in a 50-point plug of the DD 50 P Cannon type. Each service circuit is identified by the letter S followed by a 3 digit number. The TE 318 machines are generally equipped with service circuit S 015.
- The features of the connector are not detailed in this chapter since they do not constitute a standard characteristic of the machine, but very according to the specific applications. See Appendix 1 and Product Cards.

All internal circuits of the machine terminate into 5 terminal blocks mounted behind the motor plate and accessible by removal of the cover. These terminal blocks are used as follows:

- M1 and M2 for the motor circuit;
- M3 for the telegraph circuit;
- M3, M4, M5 for the service circuit.



THE MOTOR CIRCUIT

We will now describe the components of the motor circuit as shown in this page.

Transformer (T)

The primary used as autotransformer for the power supply of the motor, is provided with intermediate taps, connected to the M1 terminal block, which enables the machine to be used with different voltages (110, 127, 220, 240 V).

The change of *voltage* is obtained by moving a wire along the M1 terminal block as shown in Figure 39.

The transformer is equipped with 2 secondary windings, connected to the M2 terminal block, which are used to connect a possible incorporated telegraphic power supply (See Appendix 1).

The transformer may be supplied with any frequencies between 50 and 60 cycles.

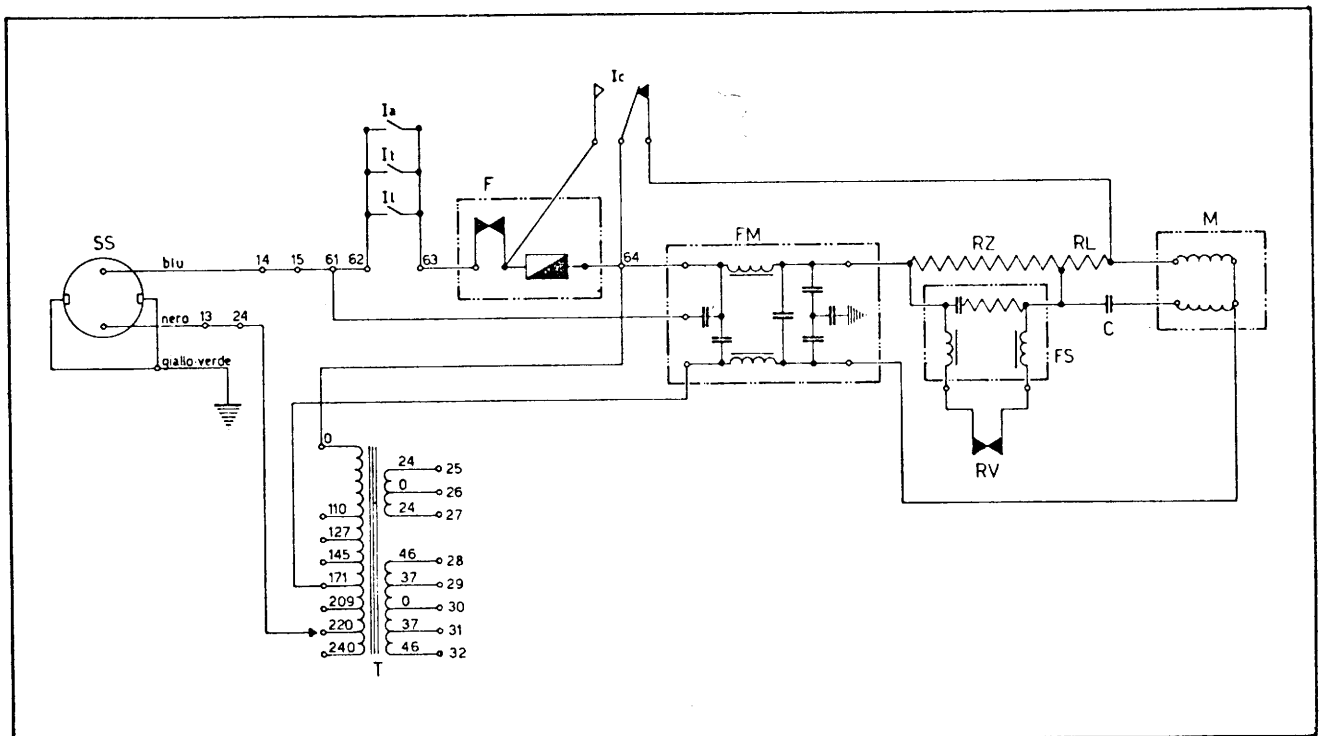
Motor Filter (FM)

It is in series with the motor circuit and it serves to suppress radio interference generated by the centrifugal governor.

Motor (M)

The motor is asynchronous single-phase, with starter winding connected to the starting condenser C. It is equipped with a centrifugal speed-governor (RV contact and FS spark suppression circuit) which includes or excludes the load resistance RZ on the motor circuit.

The limiting resistance RL, in series with the motor, limits the speed variations of the motor to a constant value (See Chapter on Speed Control).



Operating: 2,500 revolutions/minute

The motor power supply current and the consumption are respectively 171 volt and 105 Watt. Speed stability within $\pm 0.75\%$ within a deviation of current of $+ 10\%$, $- 15\%$ and of frequency of $\pm 5\%$.

Starting time: Less than 0.6 seconds.

Starting condenser (C): 8 microfarad, 450 Volt.

Load Resistance (RZ): 350 Ohm, 15 Watt.

Limiting Resistance (RL): 100 Ohm, 20 Watt.

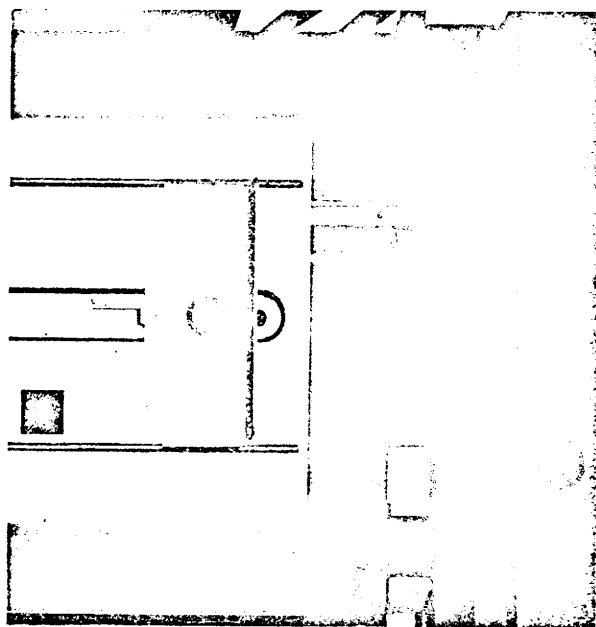
Thermal Cut-out (F)

It is a safety device which interrupts the motor circuit in the event of prolonged over-voltage due to the stalling of the motor.

The operating delay is less than 5 minutes.

The minimum over-current is 0.4 Amp.

To reactivate an interrupted circuit, we depress the red button.



Centrifugal switch (IC)

It is connected mechanically to the drive shaft, and it commutes when the motor reaches normal speed.

On lower speed it excludes the limiting resistance (RL); at normal speed the centrifugal switch includes the limiting resistance and excludes the thermal cut-out.

Switches

Three switches connected in parallel act on the motor circuit:

- Time Switch (IT) controlled by a timing mechanical device, will close when the reception electromagnet receives any signal, and will open again the motor circuit after about 40 seconds from the last signal received.
- Starter switch (IA) is controlled by the "Delete" key; it is used to instruct the start of motor from keyboard.
- Local switch (IL) it controls the start of the motor upon the depression of the key "Line Feed and Local Carriage Return".

The control device of the Time Switch may be excluded by the intervention of a mechanism in order that the contacts of the switch remain permanently closed. This operation is necessary, for example, when the machine has to be used in "blind full-duplex" mode.

Motor Cable (CM)

It consists of three wires terminating in a plug. Blue Wire: Carries the A.C. to contact "0" of the transformer through the switches IA, IT and IL and the thermal cut-out F.

Black Wire: Carries the A.C. to the variable tap of the transformer (conversion to local voltage).

Yellow-green Wire: It is connected to the frame of the machine for grounding.

The plug normally used is of Schuko type.

Radio-interference

The values of radio-interference measured on the motor circuit of the machine are lower than the limit acceptable by VDE rules (Klein curve) in the field of 0.15 to 30 MHz.

Adjustment and Control of the Speed

As already mentioned in the specific chapters, the serialization and deserialization are performed by mechanic devices. It is therefore necessary that the motor controlling them have a strictly constant speed since it must supply to these devices a correct time-base (distance between the rises of pulses in the case of serialization and interval between instants of selection in the case of deserialization).

The motor is therefore equipped with a speed control which consists basically of two centrifugal weights pivoting on the rotor of the motor. These masses are set in such a way as to cause, when the motor reaches the nominal speed (2500 revolutions/min), the opening of an electrical contact which inserts a load resistance in series to the winding of the motor, so that the speed of the motor is decreased.

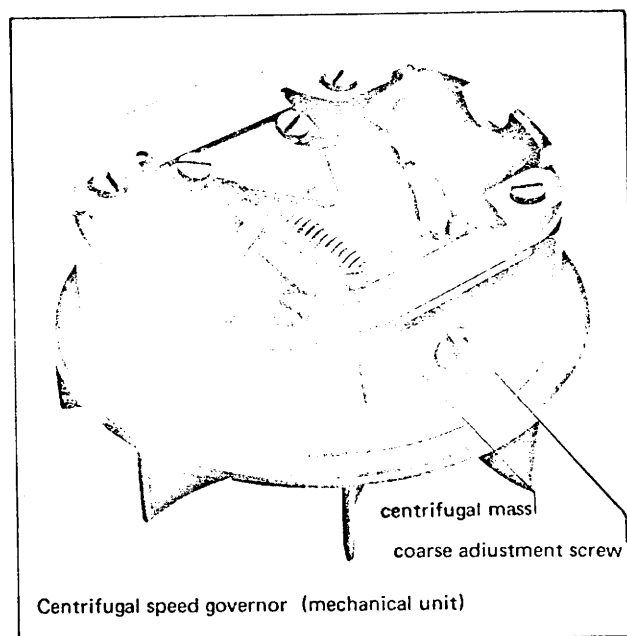
In fact this control acts so quickly that it causes the intervention of the contacts every 6 milliseconds. In this way the motor keeps even its speed with alterations of $\pm 0.75\%$ for very long periods (500-1000 operating hours).

The speed control is obtained by adjusting the setting of the two centrifugal masses.

We have two types of regulation:

a) Approximate Adjustment.

It is obtained by turning clockwise (increases

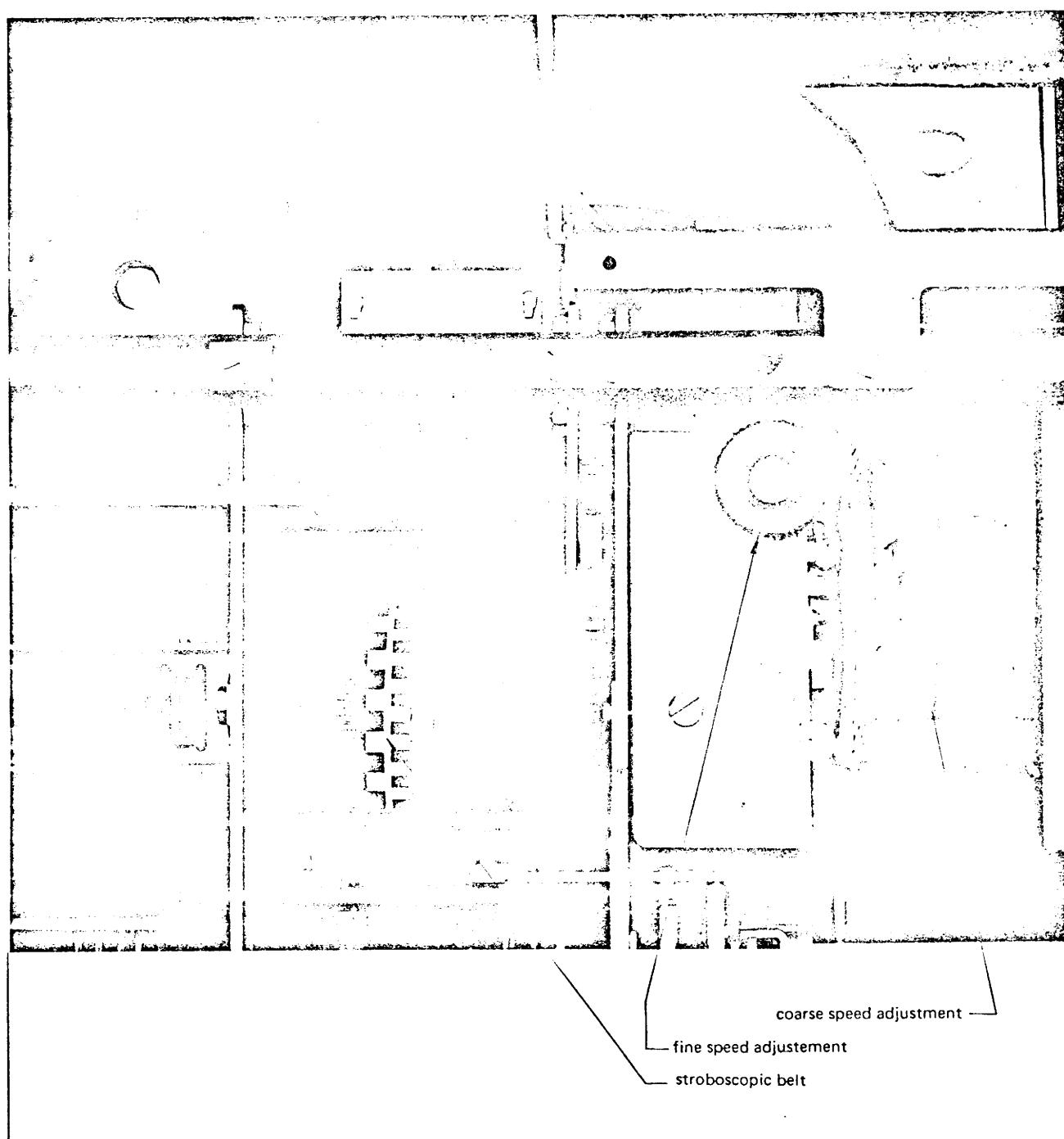


the speed) or counter-clockwise (decreases the speed) the two screws provided for this purpose on the centrifugal masses mounted on the weights of the motor.

This adjustment may be made by an operator with a screwdriver while the motor is stopped.

b) Exact Adjustment.

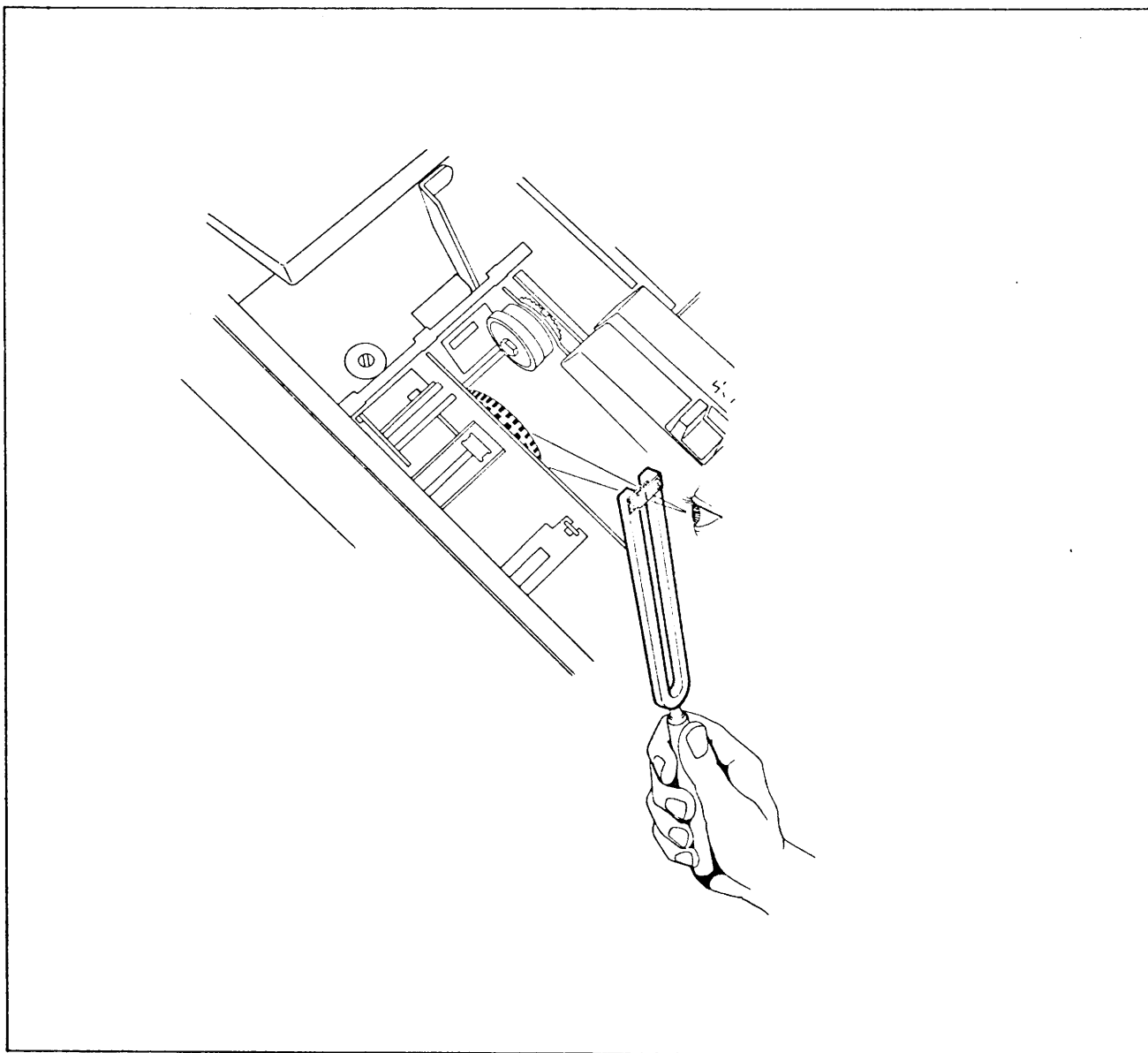
It may be made while the motor is in motion by rotating manually the red cogged wheel (clockwise to increase the speed, counter-clockwise to decrease it) situated outside the control.



Speed Control

The speed can be regulated by aiming between the vibrating blades of a turning fork (125 cycles) or by illuminating with a stroboscope the black and white band mounted on the pinion of the

deserializing group, which must appear stationary. This stroboscopic band has two series of lines, but for the TE 318 the series having a higher number of lines is the one that has to be observed.



THE TELEGRAPH CIRCUIT

We are listing herewith the different components of the Telegraph Circuit.

Transmission Contact (T)

It is a contact for the modulation of the line current controlled by the distributor. It enables the machine to operate in single or double current.

Send/Receive Switch (D)

It is a contact for modulation controlled by the transmission group. It operates during transmission of signals and resumes a stand-by position at the end of the transmission.

It is used in some types of connection in double current.

Reception Electromagnet

It is a polarized electromagnet used for reception of telegraph signals in double current. An adju-

stable balancing spring enables the machine to operate in single current.

The electromagnet has two equal windings which can be serialized or deserialized by the movement of some wires on the M3 terminal block.

The windings are generally connected in parallel; a serialized connection may be advisable under some special conditions of connection.

Specifications of each winding:

2800 turns; $R = 210 \text{ Ohm}$; $L = 1.3 \text{ Henry}$

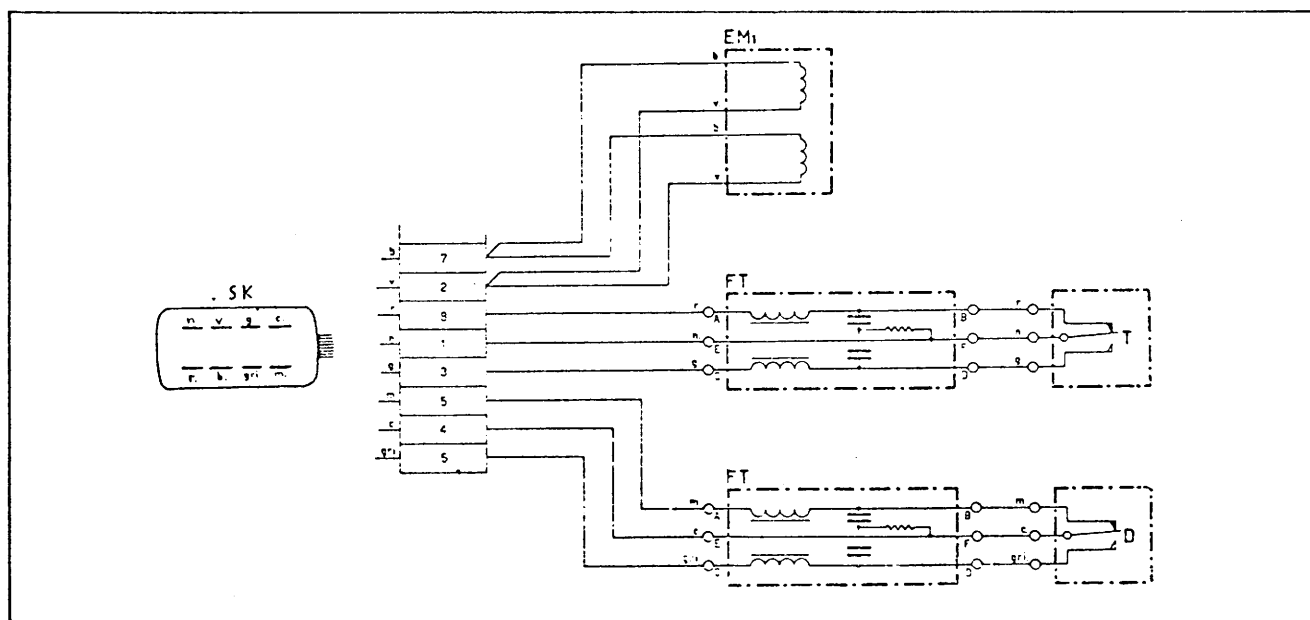
Operating current: From 20 to 60 mA.

Telegraph Filter (FT)

In series with the transmission contacts of the send-receive switch, it reduces radio interference generated by the contacts.

Telegraph Cable (CT)

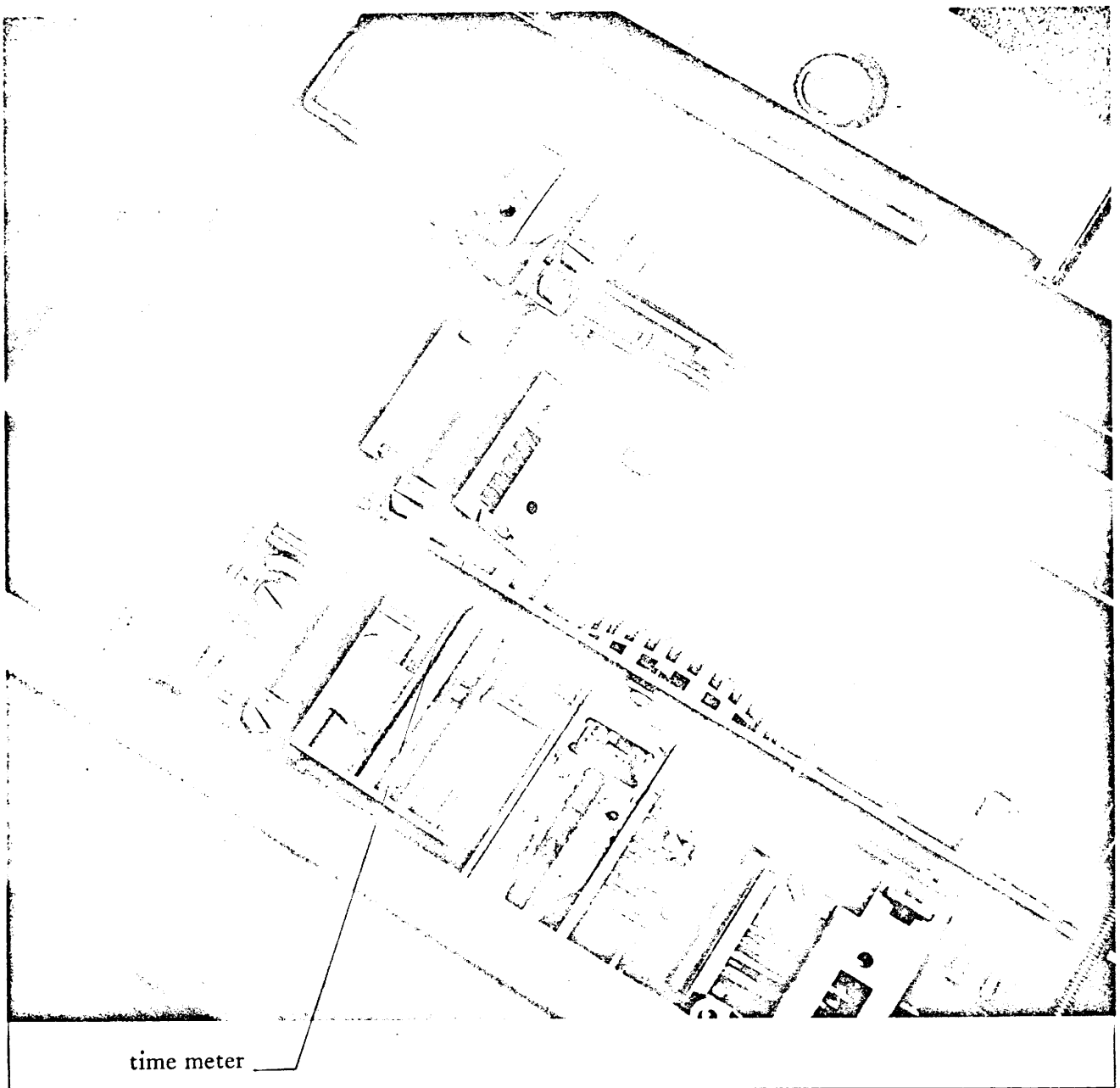
It is an 8-wire cable ending into a kuke type plug.



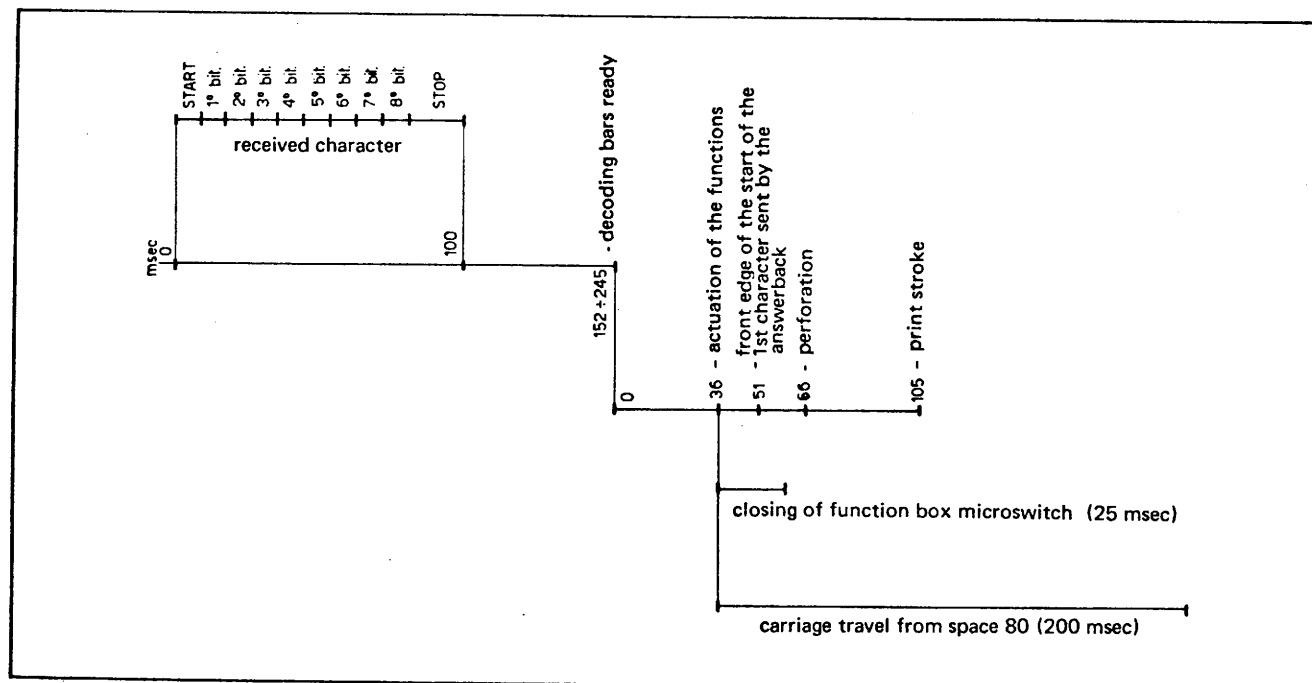
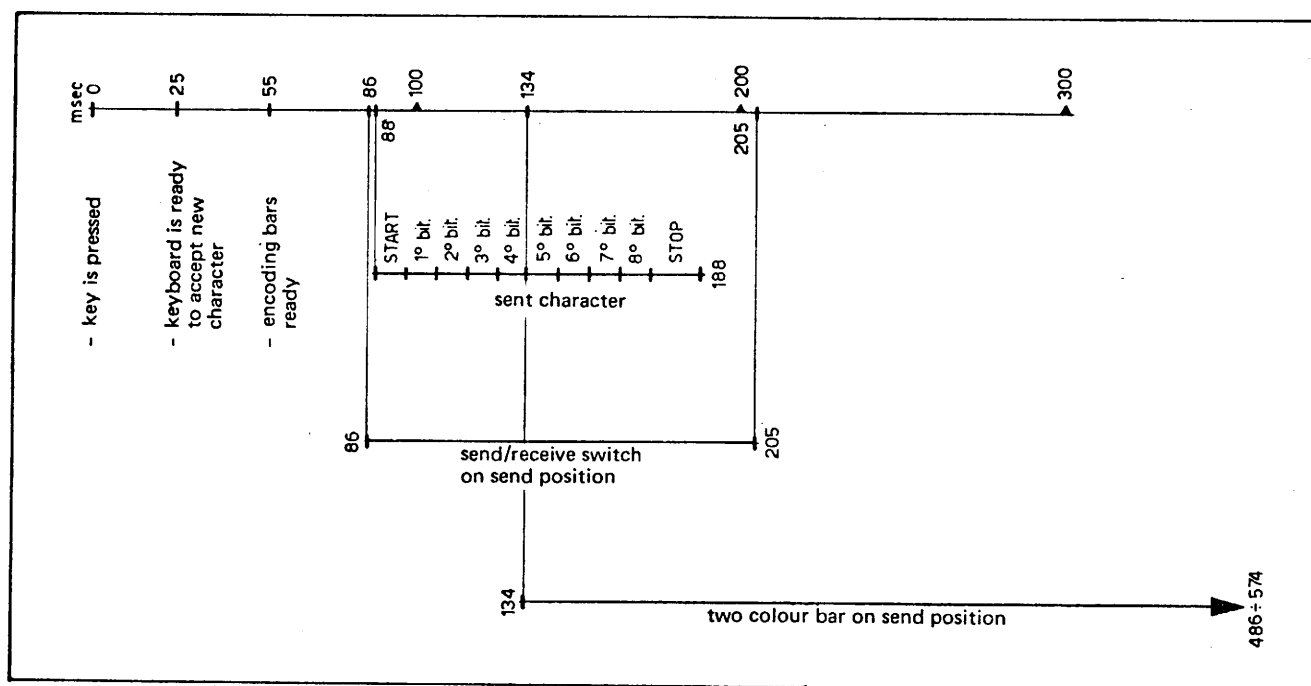
TIME METER

The TE 318 is equipped with a time-meter which records operating time. This is moved by the main shaft and through a series of reduction-gears

rotates 5 wheels which indicate hours and decimals of hour of machine running time.



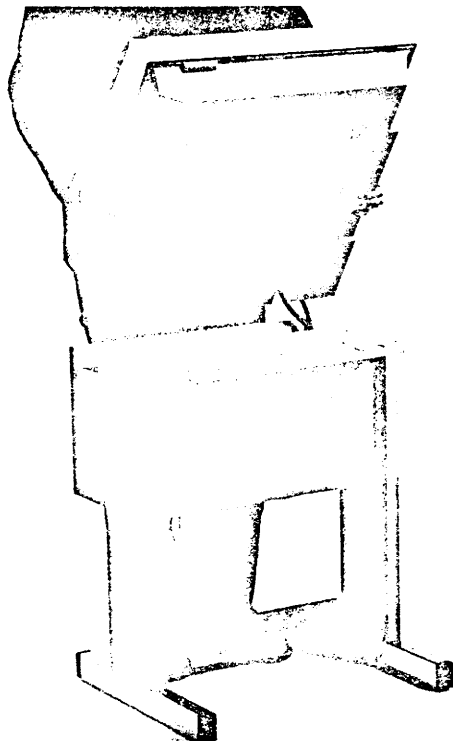
SCHEMATIC OF THE OPERATING TIMES



CASING AND WORK-STATION

All functions as well as all mechanical and electrical groups, including the Perforator and the Reader (optional) are contained in a single casing. The machine can therefore be set up on any table like a typewriter.

It is however supplied always with a specially designed table to create a Work Station. The



machine is attached to the table by a big central screw.

A box containing the connection cables (in order that they are not visible) is attached to the back of the stable.

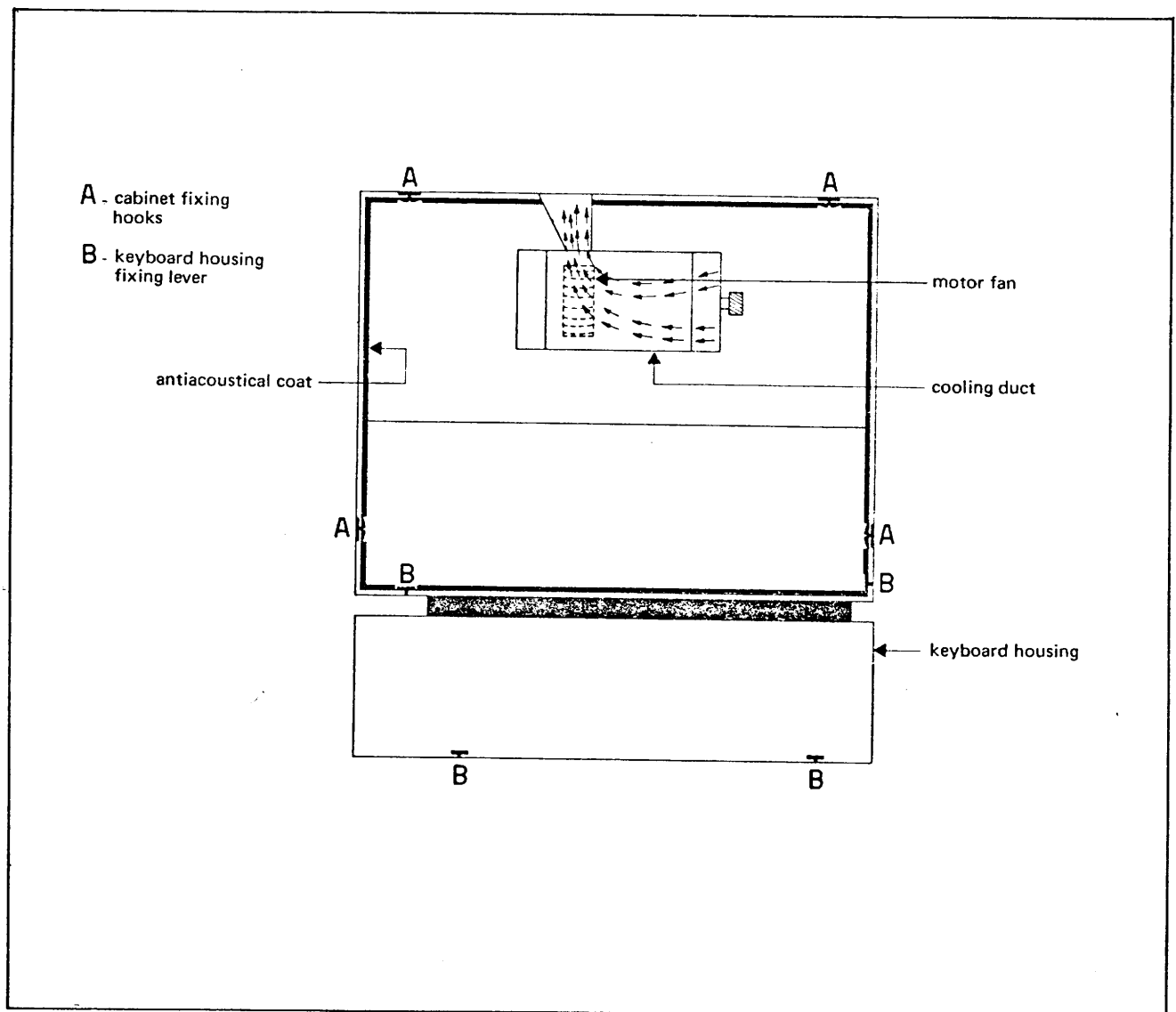
The casing of the machine consists of three parts:
a) A central body shaped like a parallelepiped has on top two covers which can be easily lifted in order to obtain complete access to the machine for the usual operations to be performed by the operator:

- replacement of paper roll or of inked ribbon cartridge, insertion of paper tape.
- adjustment of the orientation device (phasor), of the bell, etc.
- control of the speed, reading of the hour-counter, etc. A support-guide is mounted on the back cover for the purpose of keeping the printed form in position for easy reading. The central body is padded with noise-absorbing material.

b) A Keyboard cover band.

c) A base.

All these parts are connected to the machine by shock absorbers in order that the vibrations of the mechanical units are not transmitted to the exterior. The motor and the resistance for speed regulation are contained within an air chamber; the air, circulated by a fan, is discharged outside the casing, avoiding an increase of temperature inside the machine during operation.



Dimensions:

Height	With table	Without table
With paper support	37 1/2" (95 cm)	12" (31 cm)
Without paper support	34 1/2" (88 cm)	9 1/2" (24 cm)

Depth	Te 318	RE 318
Without tape-roll holder	26" (66 cm)	21" (54 cm)
With tape-roll holder	28 1/2" (72 cm)	23 1/2" (60 cm)
With continuous forms device	A 002 33 1/2" to 39 1/2" (85 to 100 cm)	28 1/2" to 34 1/2" (73 to 88 cm)

Width

Without perforator side container 21" (54 cm)
 With perforator side container 23 1/2" (60 cm)

Weight

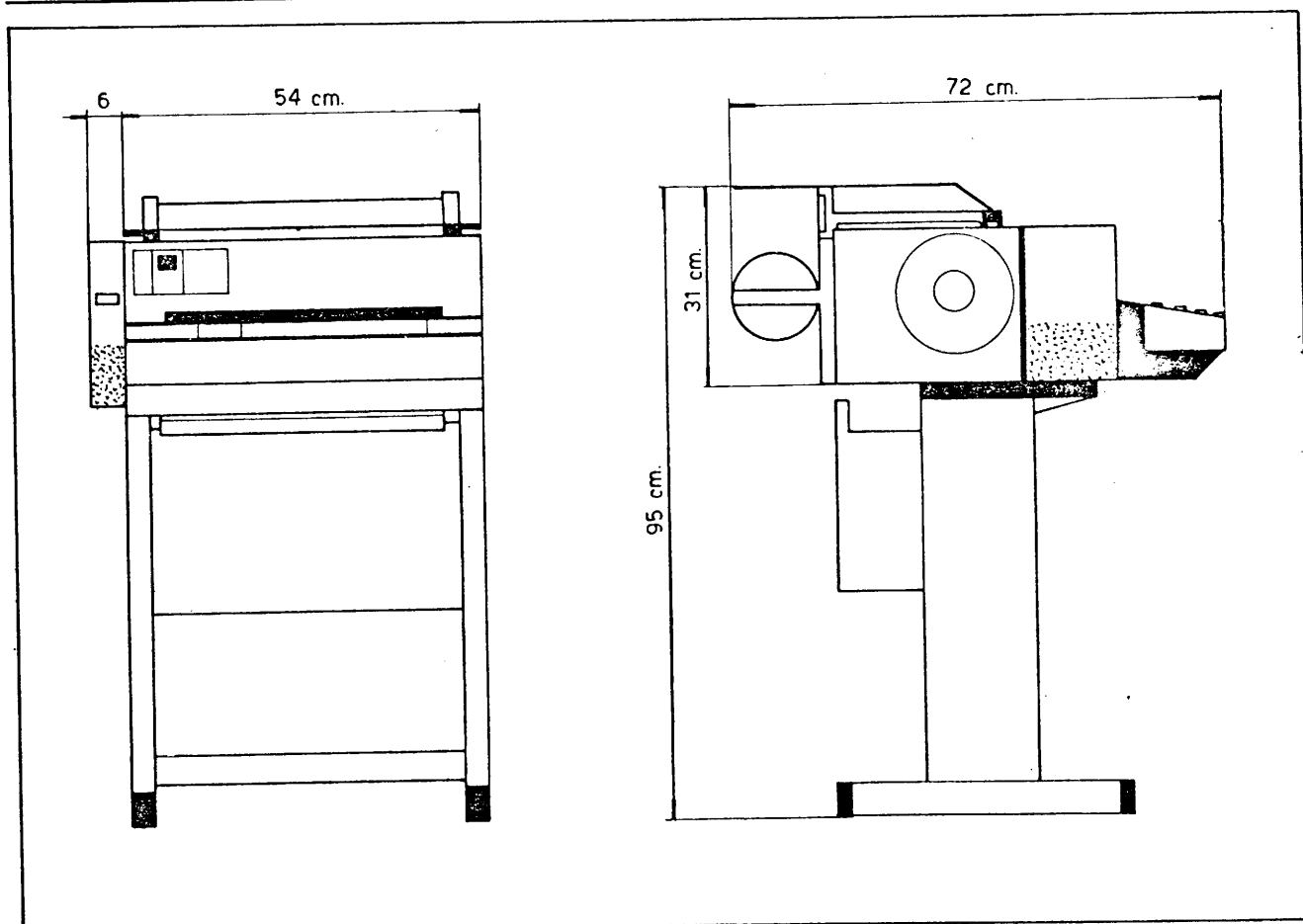
Te 318 without table, perforator and reader, with paper roll: 101 lbs. (46 Kg).

RE 318 without table, perforator and reader, with paper roll: 79 lbs. (36 Kg).

Table: 35 lbs. (16 kg).

Perforator Pe 308 with box and tape roll: 6.4 lbs. (2.9 kg).

Reader Se 308: 2.2 lbs. (1 kg).



PACKING SPECIFICATIONS

The Te 318 is packed in a cardboard box reinforced with wood frame. The main frame of the machine is attached through four rubber shock-absorbers on a wood panel and is wrapped in a nylon bag. The packing material consists of expanded polystyrene.

The printnig head is locked on the left side and therefore upon installation special care should be taken to unlock it according to instructions given in the technical manual.

The paper roll holder, the perforator container and the paper holder are separate from the machine and are stored in the same box in separate compartments.

The external dimensions and gross weight are:

Te 318 =
46½" x 38½" x 24½" Weight 165 lbs. (72 kg)
(118 x 98 x 62 cm)

Re 318 =
42½" x 38" x 24½" Weight 132 lbs. (60 kg)
(108 x 96 x 62 cm)

The table packed separately has the following dimensions and gross weigth:

24½" x 10½" x 27½" 46 lbs. (21 kg)
(62 x 26 x 70 cm)

APPENDIX 1 DEVICES AND ACCESSORIES

The Te 318 may be equipped with a series of devices (D) and accessories (A) which qualify it for special applications.

In this appendix we will describe the most usual ones, without discussing either their effective use or their respective compatibility with devices, accessories and variants of the basic machine. The exact set-up of each particular system is detailed by the catalog of Product Cards.

In this appendix we will not list devices for connection to line, which are described in specific manuals (A 021, A 024, etc.).

D 001 - INDICATOR OF END OF PAPER

This device consists of an arm (attached to the back side of the casing), which rests on the paper roll. When the roll is almost exhausted and thus its diameter has decreased to about $1\frac{1}{4}$ (3 to 6 feet of paper), this arm will activate a micro-switch by an exchange contact.

The three contacts of the microswitch terminate

in a terminal block of the motor plate, to which the service cable with Cannon DD 50 P plug is connected. This signal is generally used by an external source.

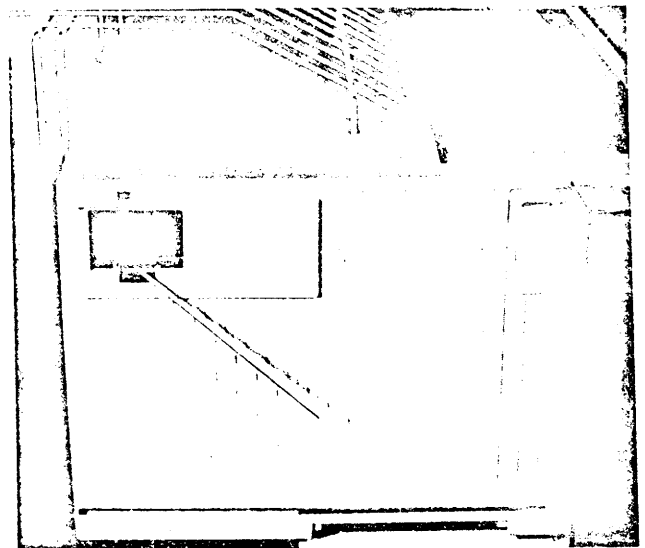
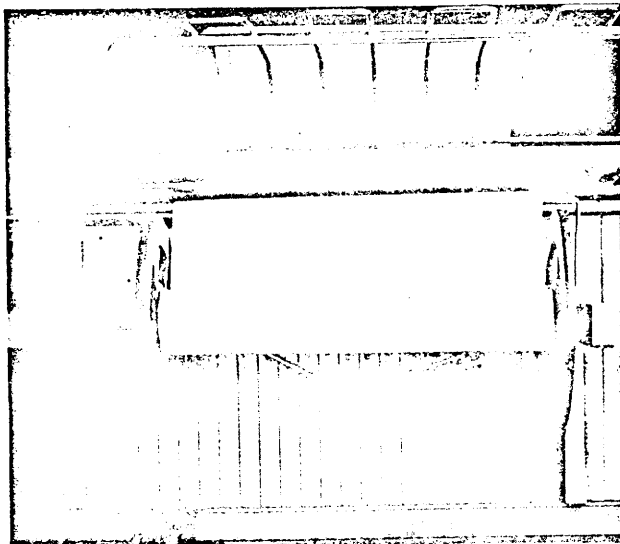
Its functions are detailed in the specific descriptions of such devices.

D 002 - INDICATOR OF END OF TAPE

This device consists of an arm (attached to the left side of the casing) which rests on the side of the roll of tape. When the roll is almost exhausted and thus its diameter is of about $2\frac{1}{2}$ " (25 feet of tape) the arm will activate a micro-switch by an exchange contact.

The three contacts of the microswitch terminate on a terminal block of the motor plate to which is attached the service cable with Cannon DD 50 P plug.

This signal is generally used by an external source. Its functions are detailed in the specific descriptions of such devices.



D 003 - INDICATOR OF MOTOR "ON"

This device consists of an exchange contact activated by the same centrifugal masses controlling the contact of the speed regulator. When the motor reaches the speed of 2000-2300 revolutions/minute (remember that the nominal speed is 2500) the commuting of the contact takes place.

The three contacts of the exchange switch terminate in a terminal block of the motor plate, to which the service cable with Cannon DD 50 P plug is connected. This signal is generally used by an external source and its functions are detailed in the specific descriptions of such device.

D 004 - INDICATOR OF MOTOR AT NORMAL SPEED

This device gives an external signal when the motor has reached the normal speed (2500 revolutions). The instruction is given by the contact of the speed adjuster which inserts the load resistance in series to the winding of the motor (See Chapter "Adjustment and Control of Speed"). The voltage at the terminals of the load resistance supplies with power circuit.

The three contacts of the exchange switch terminate in a terminal block of the motor plate to which the service cable with Cannon DD 50 P plug is connected.

This device is assembled in place of the D 003 device. This signal is generally used by an external source and its function is detailed in the specific description of such device.

D 005 - INDICATOR OF END OF TAPE ON READER

This device consists of a sensing bar aligned with the eight coding bars of the reader, which tests on each reading cycle, the presence of tape by sensing its edge. When the tape is finished this sensing bar switches a microswitch generating a pulse instruction.

The three contacts of the exchange switch terminate in a terminal block of the motor plate to which the service cable with Cannon DD 50 P plug is connected.

This signal is generally used by an external source and its function is detailed in the specific description of such device.

D 006 - ELECTRICAL OUTPUTS FROM KEYBOARD

This device consists of a series of contacts (five at the most) situated under some keys of the keyboard. The depression of the keys causes the closing of the contact. The switches (eight) terminate directly in the Cannon DD 50 P plug of the service cable.

The position and number of switches must always be related to a specific keyboard diagram.

Each particular configuration of this device is identified by a number added to the model (ex: D 006/1, D006/2, etc.). For the list of available configurations see catalog on Product Cards.

This device is always used to guide a line control from an external source.

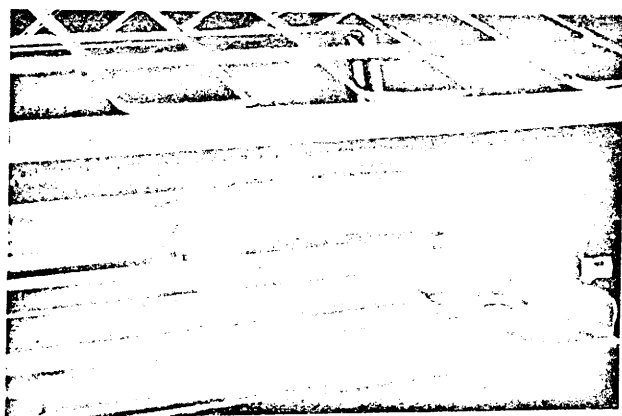
From a functional point of view this device may be considered an extension of the line control and therefore its functions are detailed in the specific descriptions of such devices.

D 011 - INDICATOR OF TORN PAPER

This device consists of a sensing lever which tests the presence of the sheet near its entry under the printing platen.

In the case of lack of paper the sensing lever instructs the commuting of a microswitch by an exchange contact. The three contacts of the microswitch terminate in a terminal block of the motor plate to which the service cable with Cannon DD 50 P plug is connected.

This signal is generally used by an external source and its function is detailed in the specific description of such device.



D 031 - ELECTRICAL CONTROLLED LOCKING OF KEYBOARD

This device consists basically of two slides, each one having a number of teeth provided for locking some keys of the keyboard. Each locking

configuration is identified by the addition of a number to the model of the device (ex: D 031/1, D 031/2, ect.). A complete list of available configurations is mentioned in the "Product Cards" catalog.

A typical example of usage of these selective lockings is found in the case of an alphabetic added to a ten-key keyboard. In such case we may control one or the other or both keyboards according to the particular operating routine which is required.

The operating slides are controlled by electromagnets; the seven switches terminate directly in the Cannon DD 50 P plug of the service cable. This device is always activated by an external source.

From a functional point of view, it may be considered an extension of the line control and therefore its functions are detailed in the specific description of such devices.

D 032 - ELECTRICAL CONTROL OF PERFORATOR

This device consists of two electromagnets which enable the machine to include or exclude the perforator by means of electrical impulses.

The three contacts terminate directly in the DD 50 P Cannon plug of the Service cable.

Note that this function of inclusion or exclusion of the perforator is an additional device and therefore does not modify the standard manual or coded instructions of the function group. However, the instruction of exclusion is governed by the rule that the perforator is always included when the lever of "Punch-All" is set in the operating position (UP).

This device is always controlled by an external source. From a functional point of view it can therefore be considered an extension of the line control and its functions are detailed in the specific description of such devices.

D 033 - ELECTRICAL CONTROLLED START OF READER

This device consists of an electromagnet which permits the start of operation of the reader of the machine by an electrical impulse. The two contacts of the electromagnet terminate in the terminal block of the motor plate to which the service cable with Cannon DD 50 P plug is connected.

This device is always controlled by an external source.

From a functional point of view it can therefore be considered an extension of the line control and its functions are detailed in the specific description of such devices.

D 130 - INTERIOR LIGHTING

This device consists of a fluorescent lamp and of its respective electrical circuits which are supplied with 110 Volt by the line transformer of the machine.

This lamp makes it easier to read the printed text. It is switched on by the start of the motor and off when the motor stops.

D 202 AND D 203 - BUILT-IN TELEGRAPH POWER PACK

These devices, which are power supplied by the teleprinter transformer, provide direct current which can be used to supply power to the machine off-line or to connect it to a short telegraph circuit (ex. inside a building). For the latter type of application the power supply must be connected with other electrical components which are listed in the specific Product Cards of this application.

The voltage supplied to the telegraph circuit is:

D 202 = $\pm$ 48 Volt

D 203 = $\pm$ 60 Volt

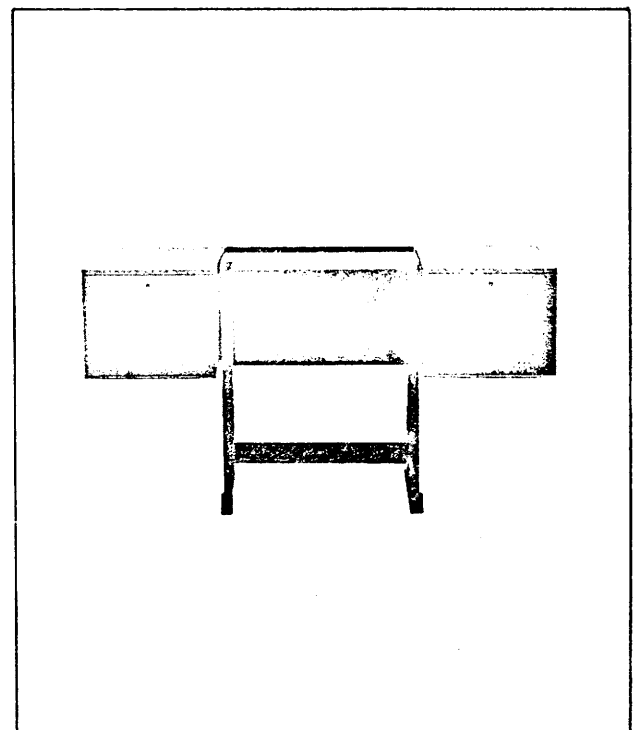
A 001 AND A 003 ACCESSORIES - SIDE CONTAINER

It is a metallic drawer which can be fitted to the right or left side of the stand of the machine. It is provided with front and back doors equipped with lock.

It may contain devices or accessories of the machine.

Its top may be used as a stand for auxiliary devices (ex: auxiliary tape reader, telephone, etc.)

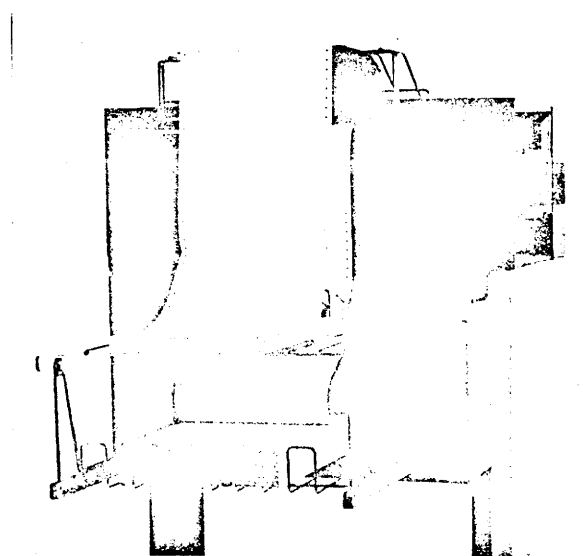
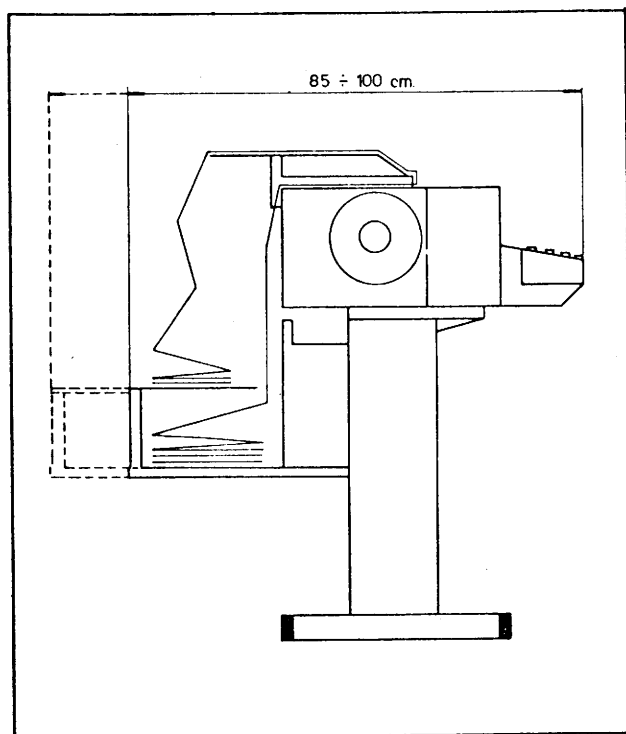
	A001	A003
Width	13½"	13½"
Height	11"	11"
Depth	16¼"	18"



A 002 ACCESSORY - CONTINUOUS
FORMS CONTAINER

It can be fitted to the rear of the machine stand for placement of batches of forms when the machine is equipped with sprocket feed platen. It

consists of a fixed lower level on which the batch of forms to be printed will be placed, and of a folding upper level on which the printed forms are deposited. This container may be easily adjusted to forms of various width.



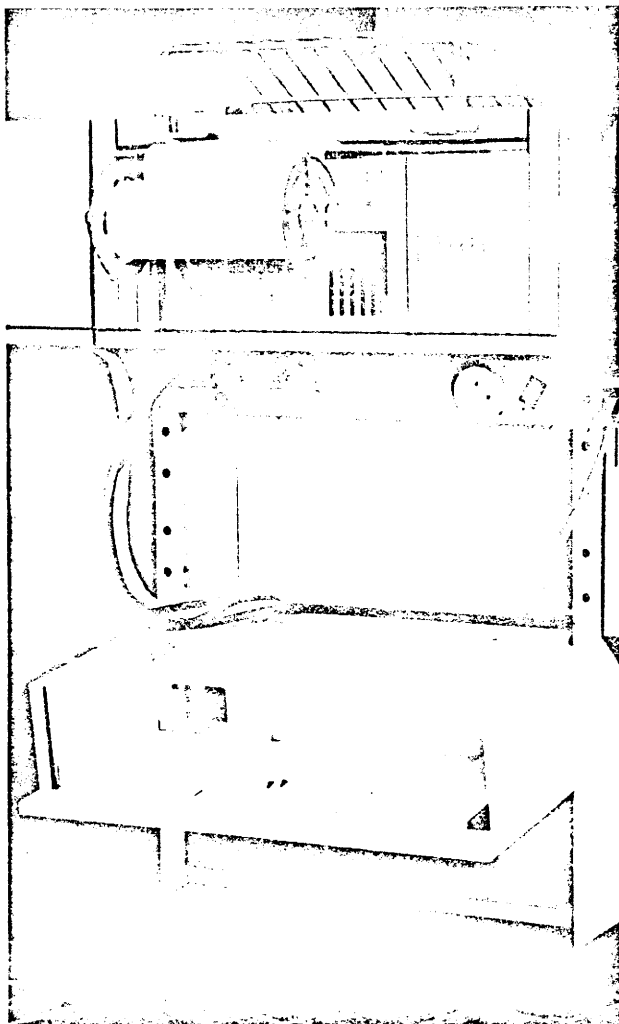
A 039 - A 040 - A 044 - A 046 - A 048 -
ACCESSORIES GROUPS OF
INTERCONNECTING PLUGS FOR CABLE
CONNECTION

Each one consists of a metallic panel to which is attached a number of interconnected plugs. Its purpose is to connect one to another as well as with the outside the cables of the various devices which form the system:

- Te 318 machine
- Line Control
- Power Supply
- Telegraph Line.

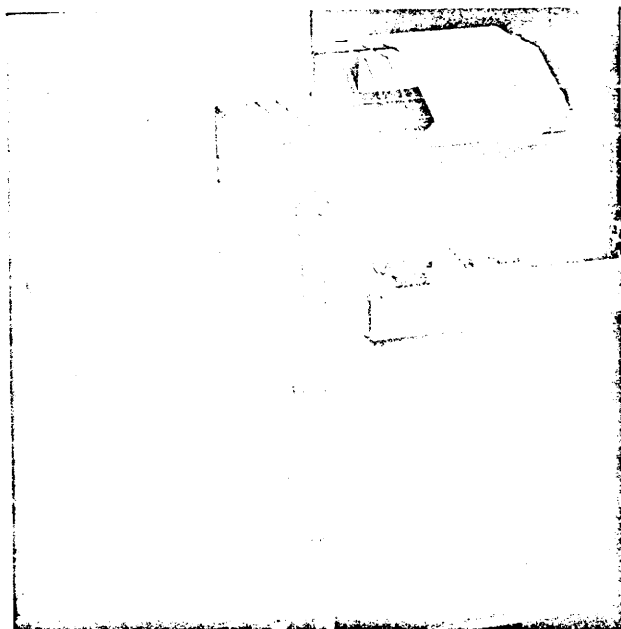
This panel is situated between the supports of the table on which the machine rests.

The interconnecting plug to be used for the programming of a system are indicated by the specific Product Card of the system.



A 051 - ACCESSORY REWINDER OF
8-CHANNEL TAPE

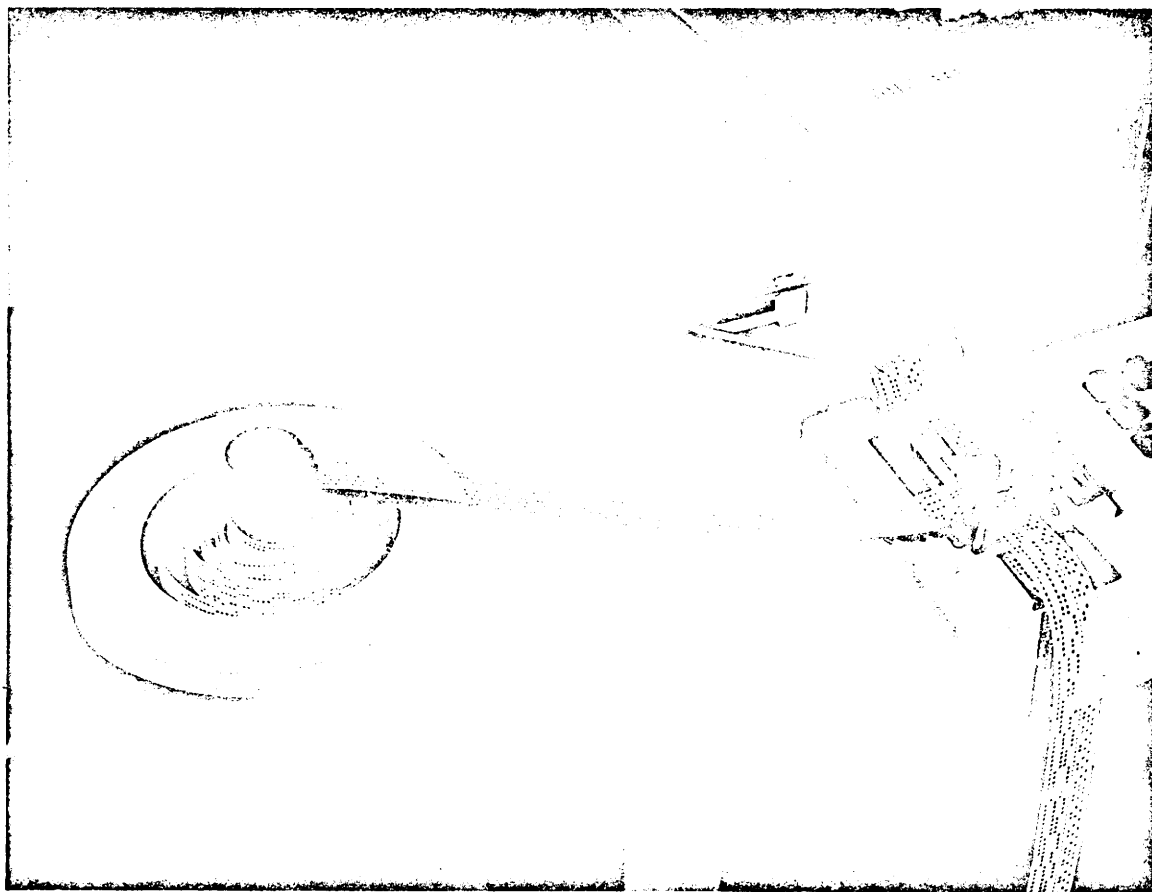
It is equipped with a 220 Volt motor which turns two discs. The tape emerging from the perforator is fed into a slot and is automatically fastened. It is fitted on the left of the machine stand.



A 055 ACCESSORY - UNWINDER OF TAPE

It consists of a shelf fitted horizontally on the left side of the machine on which is set a free-mo-

ving disc. This disc has a central conical pivot which enables the tape to unwind starting with the center of the spool.



APPENDIX 2

NOTES ON THE TECHNIQUES OF TAPE PROGRAMMING

In special off-line applications of Te 318 machines with tape punch and reader, it may be required that the machine originate a punch tape which does not correspond exactly to the printed text, but instead has more or fewer informations. This tape may be re-used later by the same machine to originate either a new text different from the first one (possibly even in format), or a new punch tape even more different.

The first text may be entered by the keyboard, or read from punch tape or be obtained by composition of the two modes, i.e. by alternating data read from punch tape with data entered by keyboard at special programmed points of the tape, where some characters order the automatic stop of the reader.

This first text, irrespective of its origin, must be properly programmed in order to obtain, during subsequent "transfers", printed texts and punch tapes always different in accordance with specific necessities.

This programming is possible by the use of a function group (ex: F 815) capable of recognizing and performing the following functions:

SO ($\overline{PR}$) - Printer "off", spacing and functions of format.

SI (PR) - Printer "on", spacing and functions of format.

DC2 (PE) - Perforator "on".

DC4 ($\overline{PE}$) - Perforator "off".

The functions of format are: Spacing, Carriage Return and Line Feed.

Rules of fundamental importance are that:

- The character (PE) (perforator "on") is punched if perforator is "on".
- The character ($\overline{PE}$) (perforator "off") is punched if perforator is "on".

Consequently, by reading on the tape the sequence $\overline{PE}$ -PE-A (1st transfer) the sequence $\overline{PE}$ -A is reperforated on another tape, because:

- $\overline{PE}$ switches "off" the perforator (and it is punched if perforator was previously "on");
- PE again switches the perforator "on" but does not reperforate (since the perforator was previously "off").
- A is reperforated since the perforator was previously "on".

If we read now this second tape (2nd transfer) we may obtain a third tape in which only $\overline{PE}$ is punched, since $\overline{PE}$ switches the perforator "off" and prevents therefore the punch of "A".

Therefore we see how it has been possible to delay the deletion of information "A" on the tape. A longer delay may be obtained by interpolating a series of "PE" characters between "PE" and "A". At each transfer, i.e. at each tape reading, we lose one "PE". The first "PE" is not reperforated because it finds the perforator switched "off" by the previous " $\overline{PE}$ ", but it activates again in the perforator enabling the punch of subsequent "PE's".

When, after a number of transfers, all PE's have disappeared, another transfer will delete also information "A" from the tape.

Note that the information we named "A" may be a printing character, a function of format or an instruction $\overline{PR}$ switching "off" the printer and the functions of format.

We will list below some characteristic examples of programming. Many other cases may be solved by applying the principles which we are describing and by combining them in different ways.

Suppose the first text is punched on tape (original tape) with all the necessary programming.

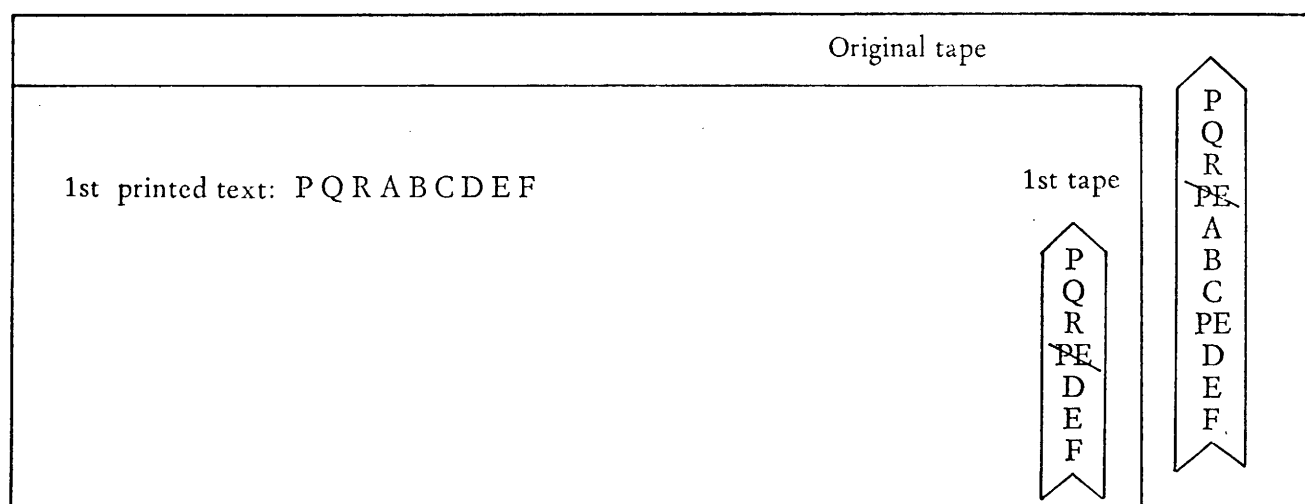
Suppose also that at the start of each block of characters, punched on tape and shown in the examples, the machine has the printer and the perforator switched "on". (If such would not be the case, it would be sufficient to insert the "Printer on" and "Perforator on" characters before the blocks).

A - DELETION OF PERFORATIONS IN THE TAPE

The retarded deletion of an information on tape is obtained by placing before such information the character "PE" and one or more "PE's" and by placing after the information another "PE".

Example A.1

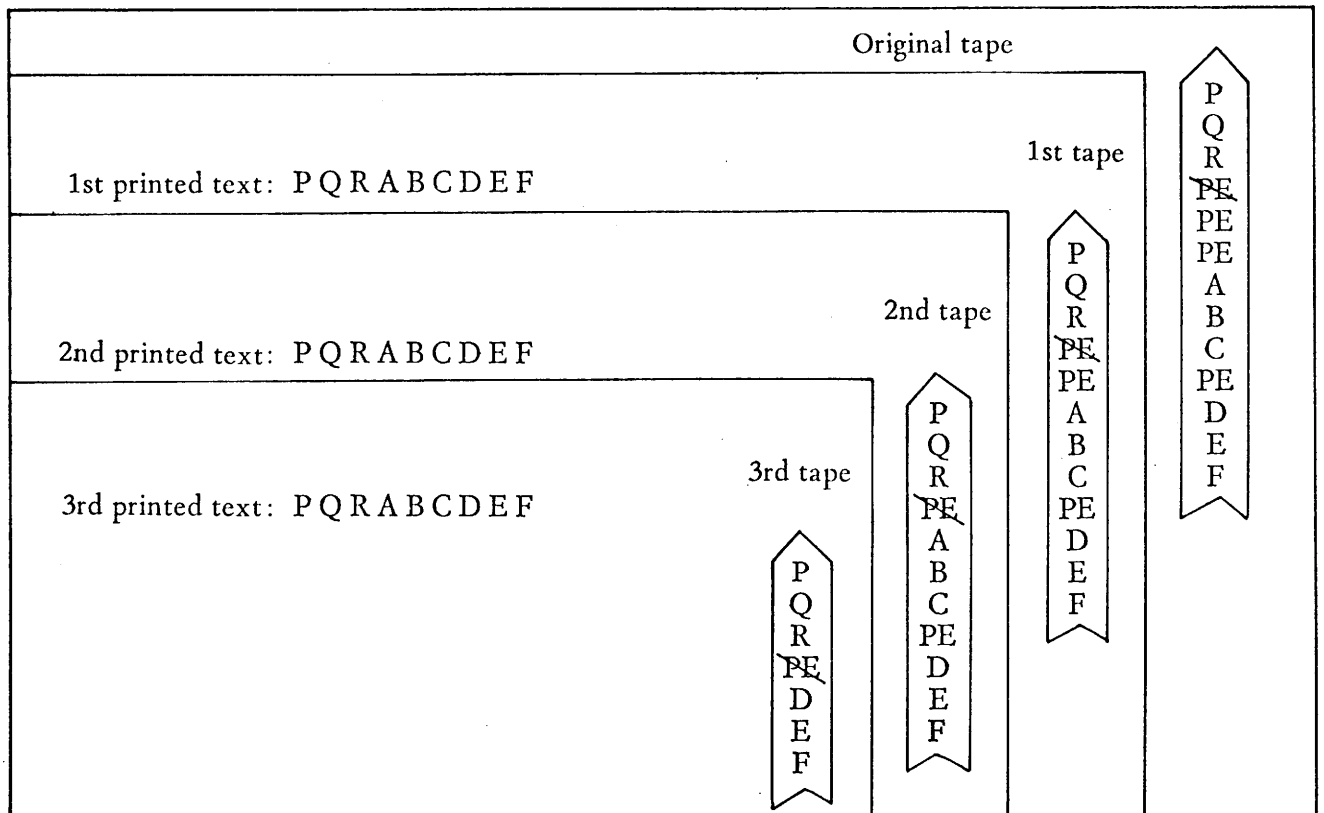
Information ABC must be printed but not punched on tape.



Example A.2

Information ABC must be printed and punched

on the first two transfers but not punched on the third one.



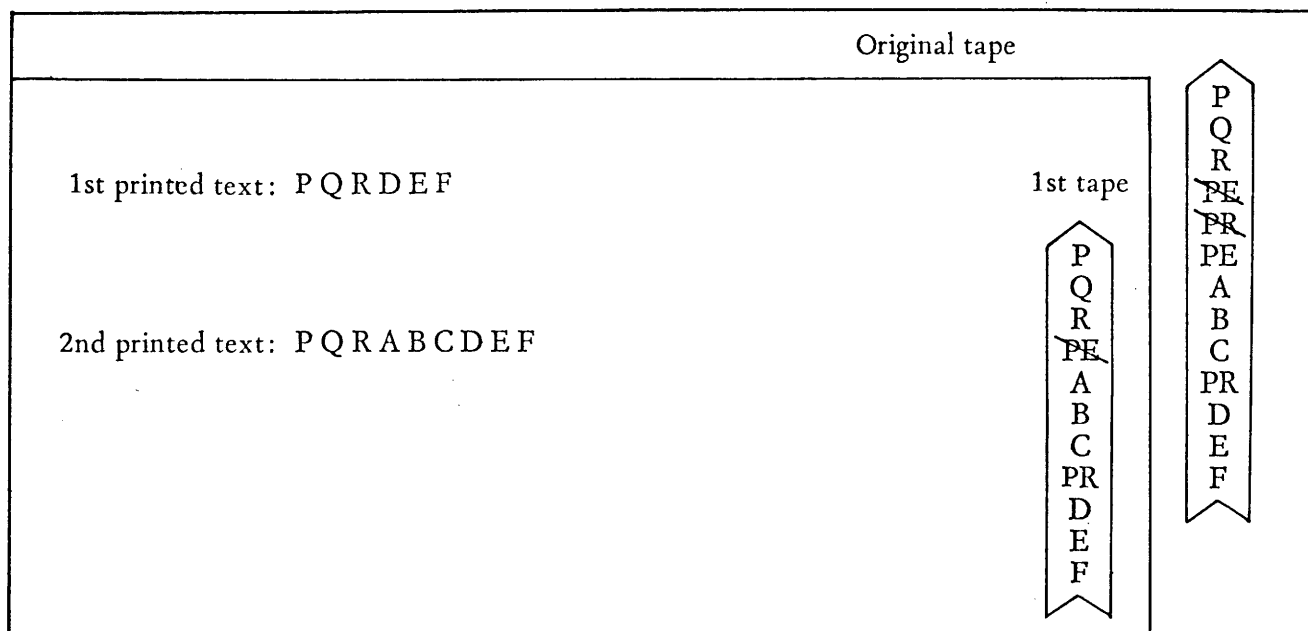
B - PROGRAMMING OF ADDITIONS AND DELETIONS IN PRINTING

The deletion of some information in printing may be obtained either by preventing the perforation (Examples A) or by placing a character ~~PR~~ before the information and a character PR after it. The retarded deletion is obtained by inserting, between ~~PR~~ and the informations to be deleted,

a PR with a group of ~~PE~~ and PE, which will prevent the reperforation of this PR after a number of transfers (Example A). The reactivation of printing is obtained by preventing reperforation by the usual group ~~PE~~ and PE.

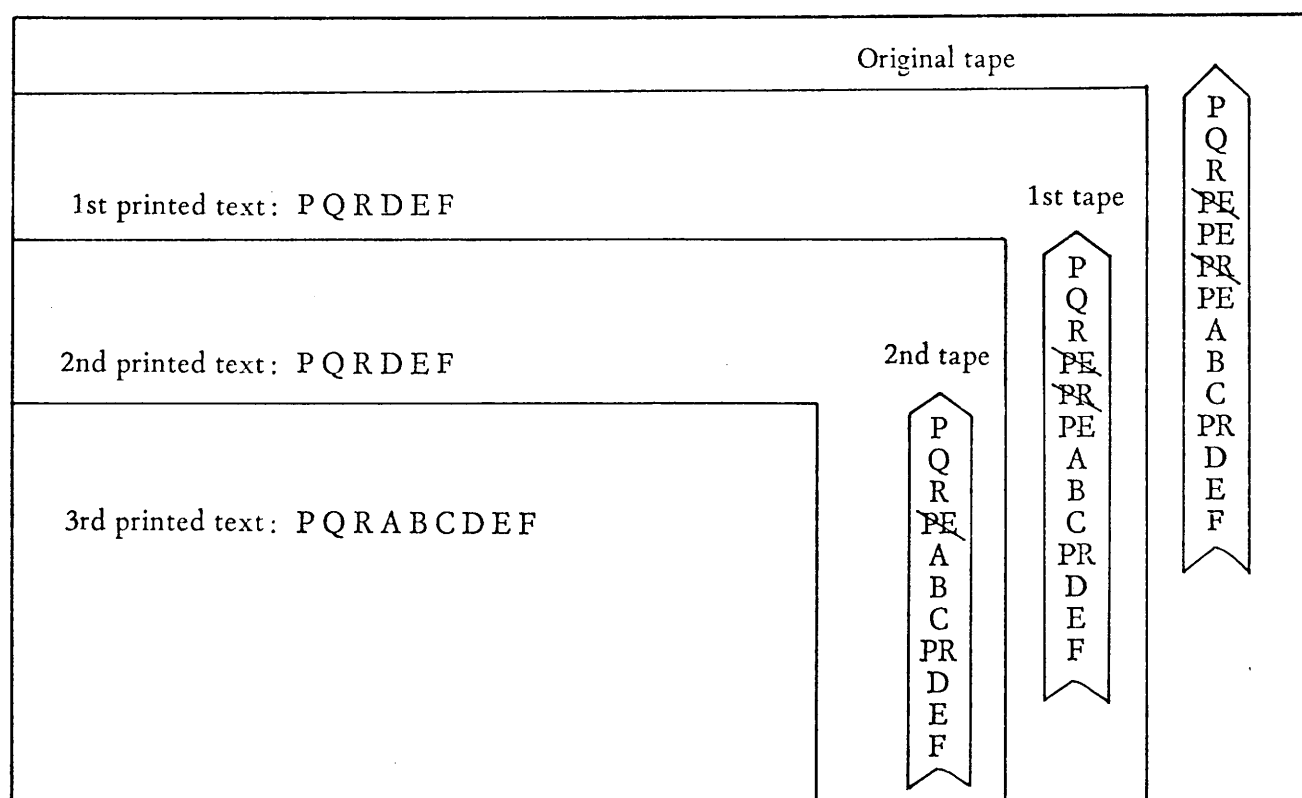
Example B.1

Information ABC must not be printed during the first transfer, but only during the second one.



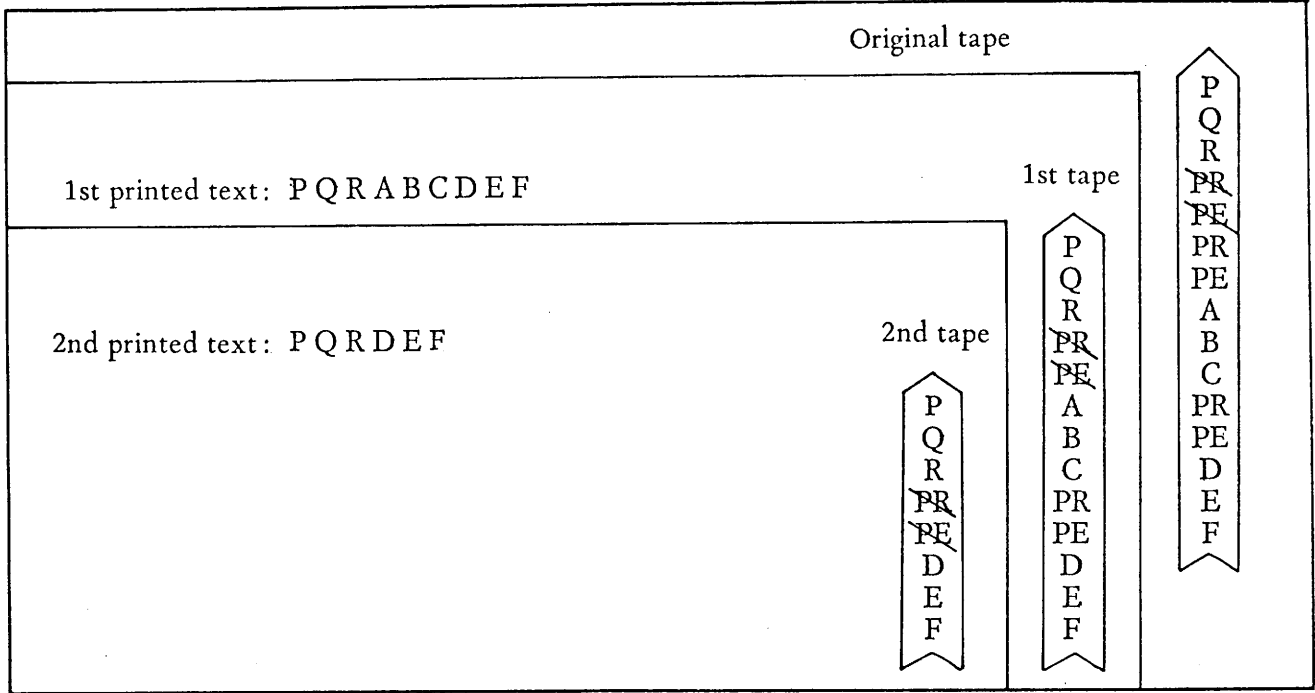
Example B.2

Information ABC must not be printed during the first and second transfer, but only during the third one.



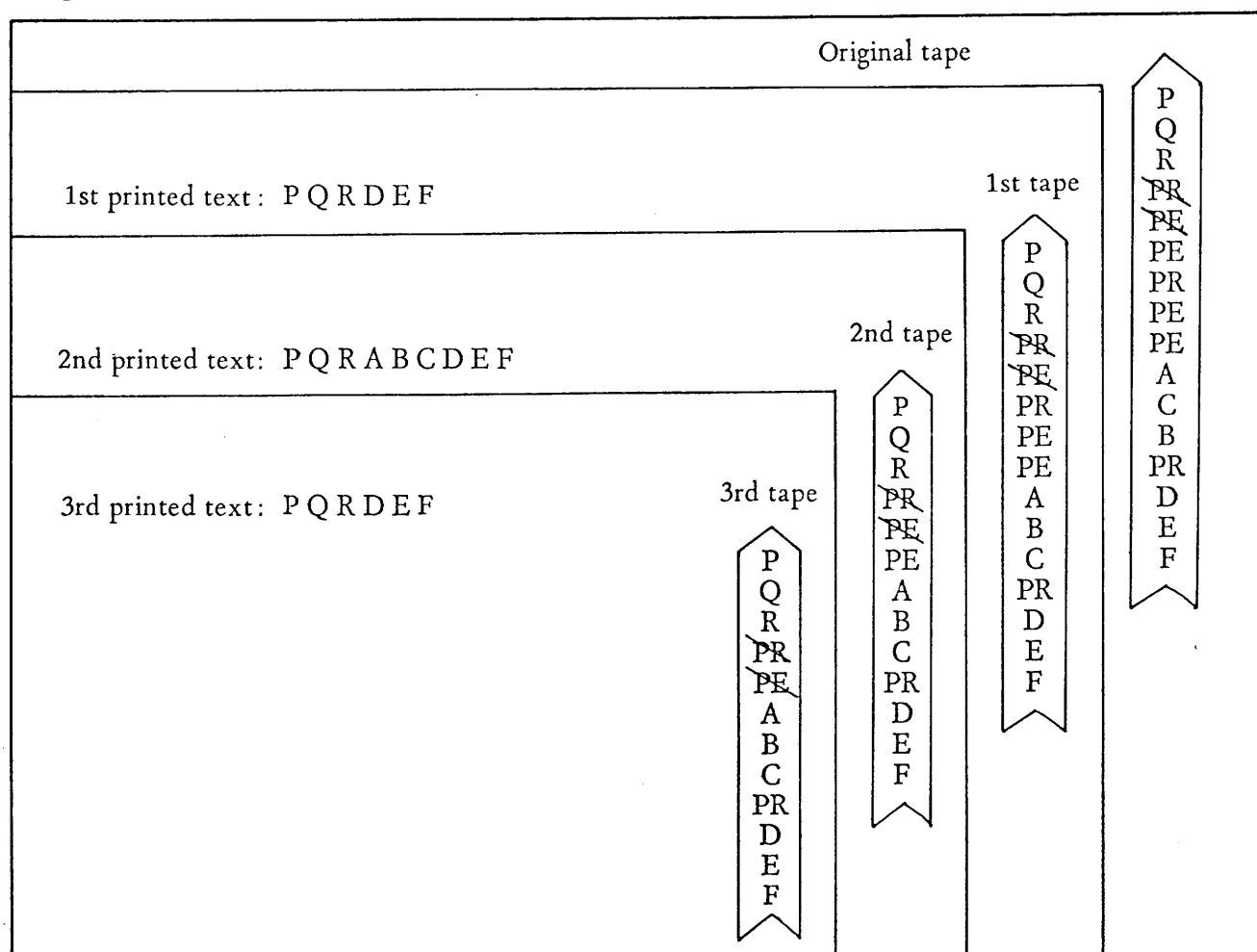
Example B.3

Information must be printed and punched in the first transfer but neither printed nor punched in the second one.



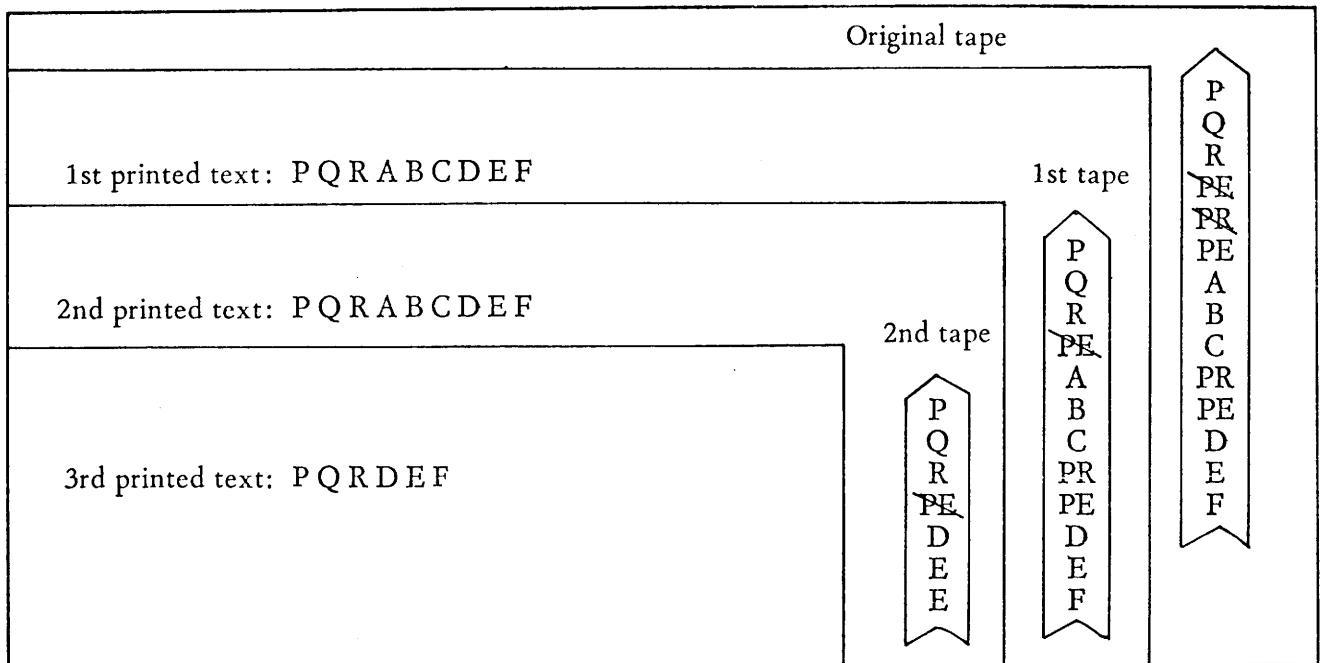
Example B.4

Information must be printed and punched in the first and second transfers, but only punched, not printed in the third one.



Example B.5

Information must not be printed in the 1st and 3rd transfer, but only in the 2nd one.



C - PROGRAMMING OF FUNCTIONS OF FORMAT

We will see now how it is possible to activate or omit functions of format during the various transfers. To omit a function of format:

- if it should not be re-activated in subsequent transfers, it is sufficient to impede the reperforation;
- if instead it must be reactivated later, it is necessary to precede it by a ~~PR~~-PR and follow it by a PR. In these conditions the function is activated. To delete it in following transfers it is enough to impede the reperforation of cha-

racter PR; therefore it may be reactivated by deleting the reperforation of ~~PR~~.

In the following examples we will consider the sequence of functions CR-LF-DEL which instructs the carriage return.

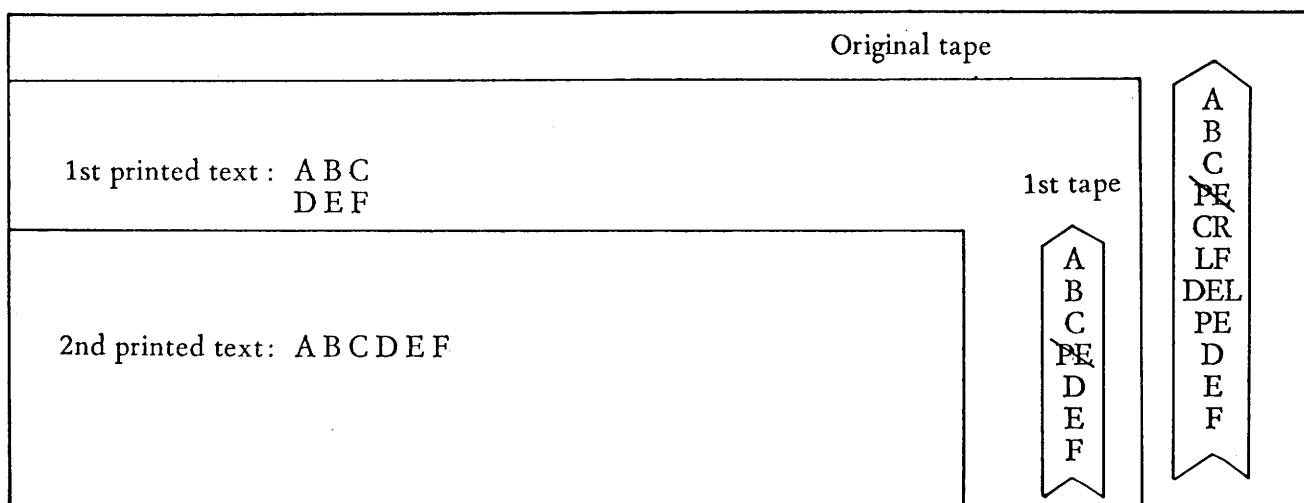
Information A-B-C-CR-LF-DEL-D-E-F is printed on two lines: A-B-C-
D-E-F

If we delete the functions of format, the printing is made on one line only: A-B-C-D-E-F.

Example C.1

1st transfer: print on 2 lines

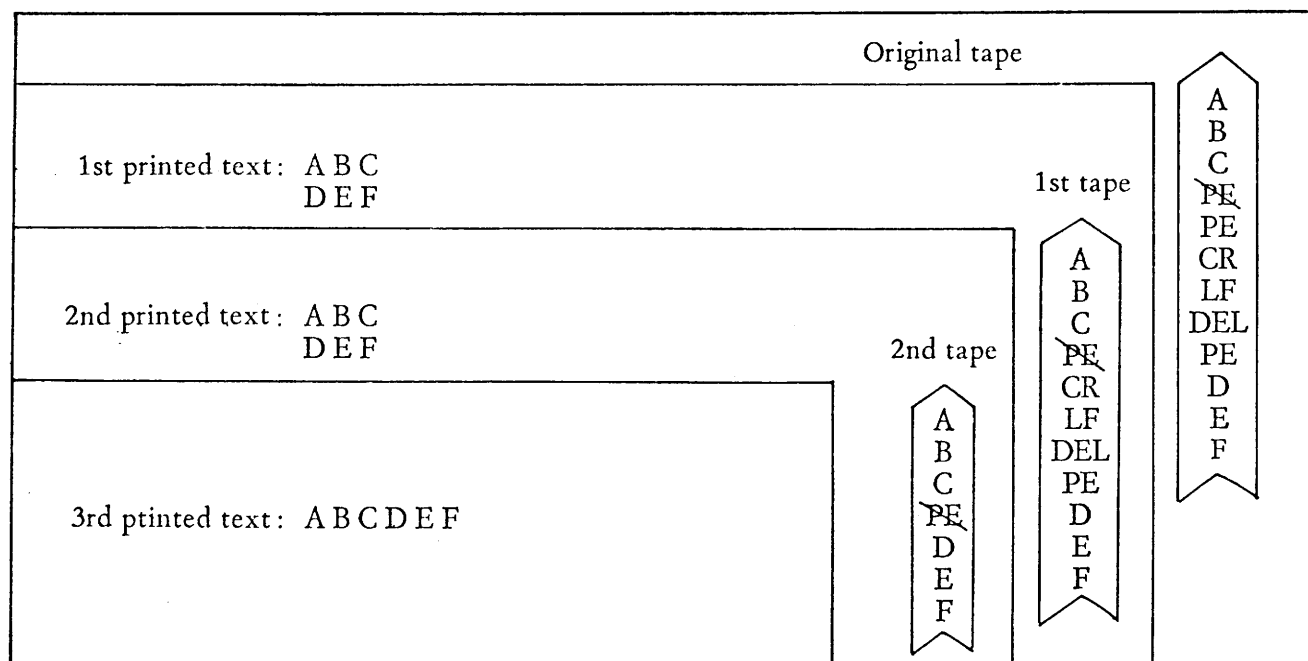
2nd transfer: print on 1 line.



Example C.2

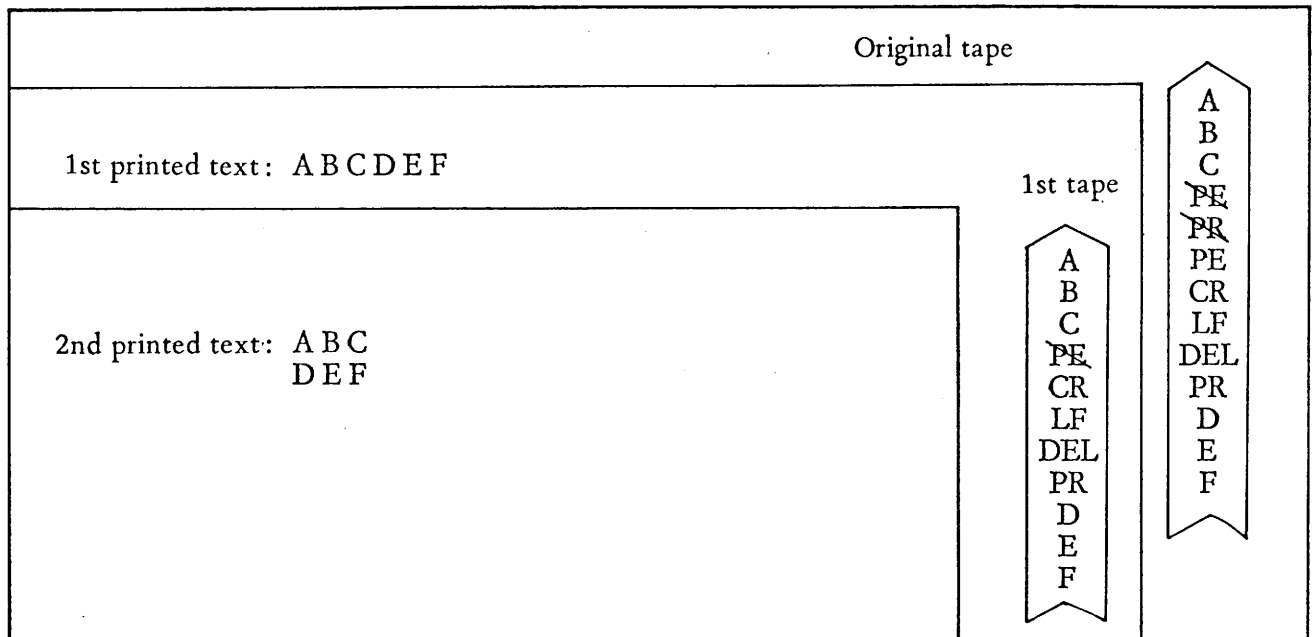
1st and 2nd transfer: print on 2 lines

3rd transfer: print on 1 line.



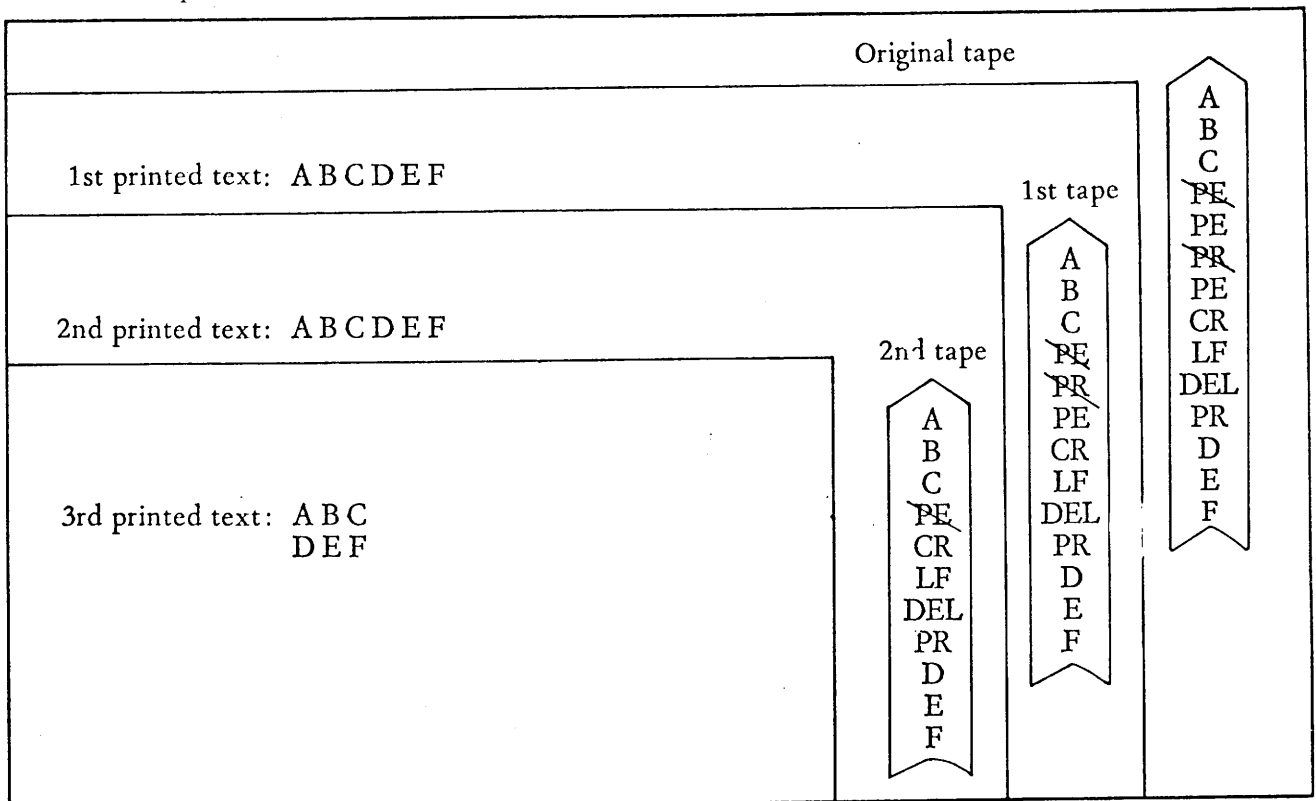
Example C.3

1st transfer: print on 1 line
2nd transfer: print on 2 lines.



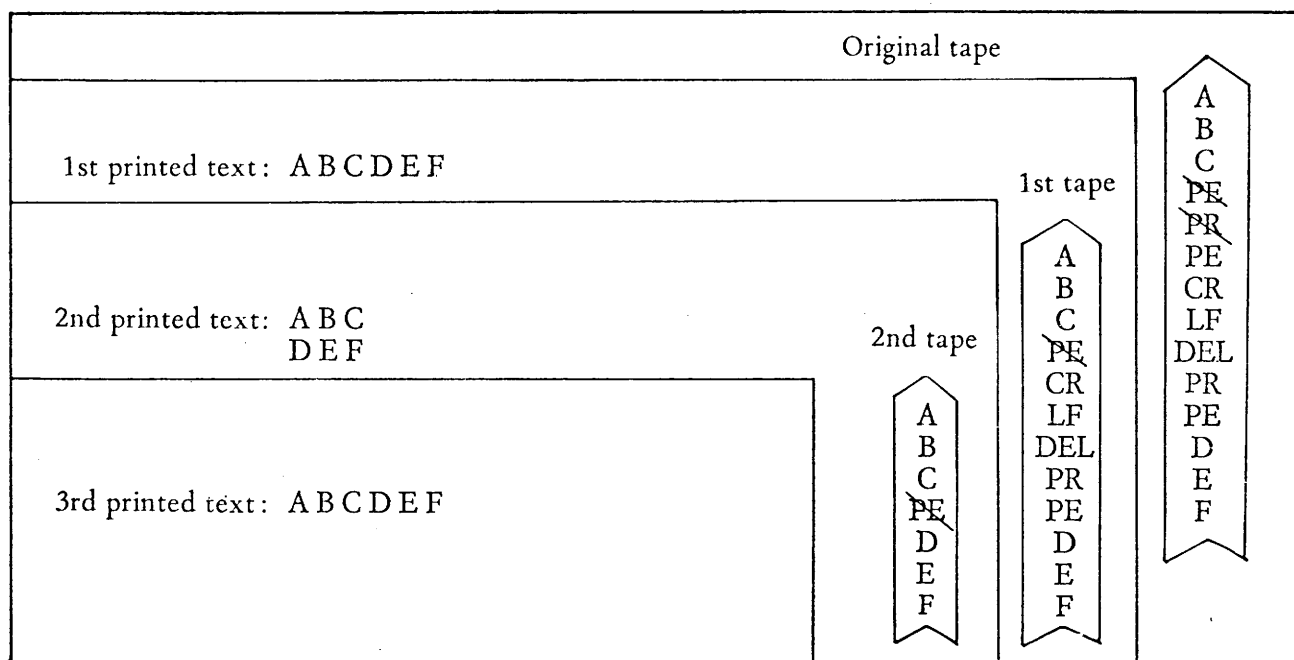
Example C.4

1st and 2nd transfer: print on 1 line
 3rd transfer: print on 2 lines.



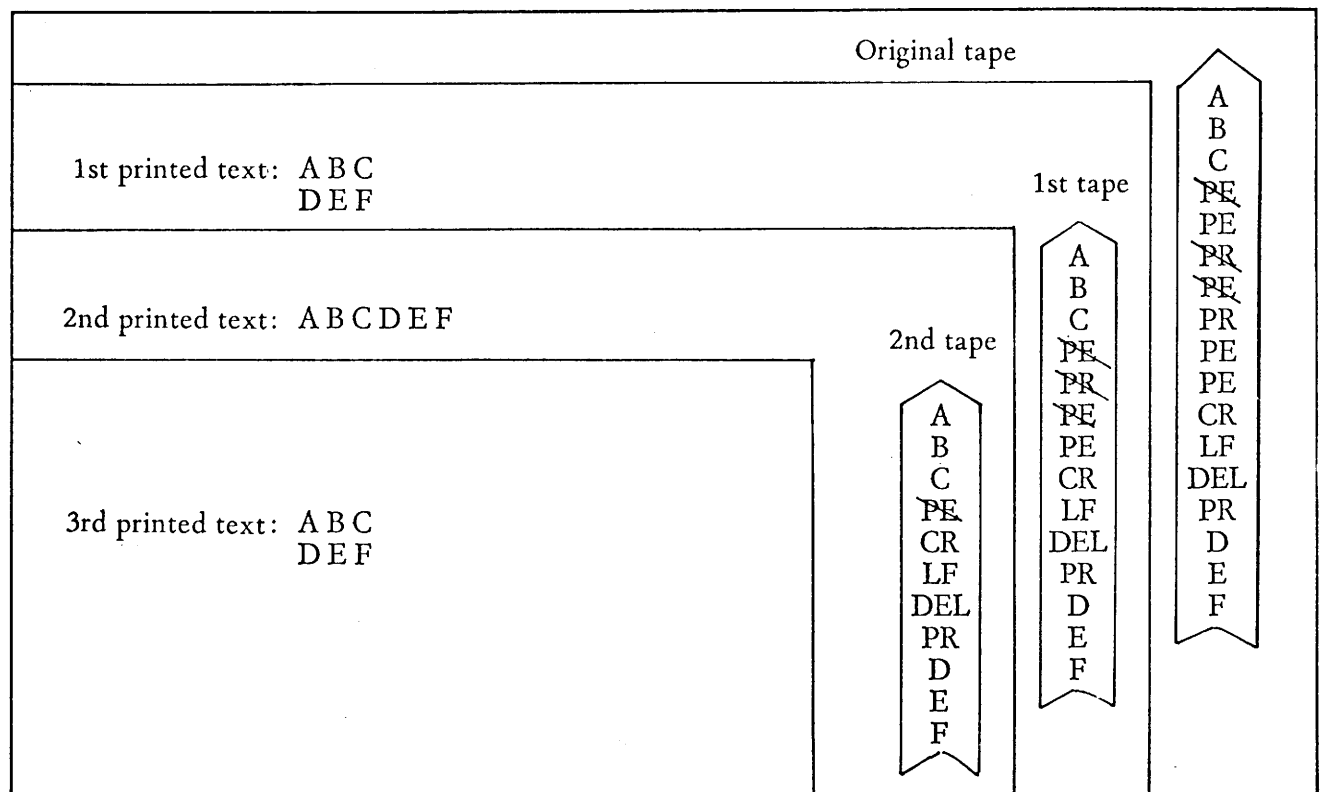
Example C.5

1st transfer: print on 1 line
 2nd transfer: print on 2 lines
 3rd transfer: print on 1 line



Example C.6

1st transfer: print on 2 lines
 2nd transfer: print on 1 line
 3rd transfer: print on 2 lines.



APPENDIX 3 SUPPLIES

PAPER TAPE

The specifications of the paper tape must follow the specifications of: "Provisional ISO Standard # 1729".

We list the most important specifications set by this document.

- Width:

1" (25.4 mm) ± 0.05 (95% of samples)
 ± 0.08 (100% of samples)

- Thickness:

0.004" (0.1 mm) ± 0.008 (95% of samples)
 ± 0.01 (100% of samples)

- Concentrations of ions of hydrogen: pH = 6 ± 1.5 .

- Ashes Contents: maximum 1%.

- Sand Contents: maximum 0.04%.

- Advisable oil contents: 5 to 9%.
- Weight: 76 to 94 gr./m².
- Resistance to static traction in longitudinal direction: averaging not less than 39.8 lbs (18.1 kilos).
- Interior resistance to tearing: minimum 19.4 ounces (55 gr.).
- Dimensional stability: for variations in relative humidity between 20 and 75%, dimensions must not vary more than 1% crosswise and 0.5% lengthwise in comparison to dimensions measured in relative humidity of 50%.
- Outside diameter of spool: 8" + 0, — 0.118" (203 mm + 0, — 3).
- Inside diameter of hole: 2" + 0.063", — 0. (50.8 mm + 1.6, — 0).

A paper tape with these specifications is available in the Olivetti stock, Code 9755542 E.

PUNCHED TAPE

The specifications of the punched tape must follow the specifications of "Provisional ISO Standard = 1671".

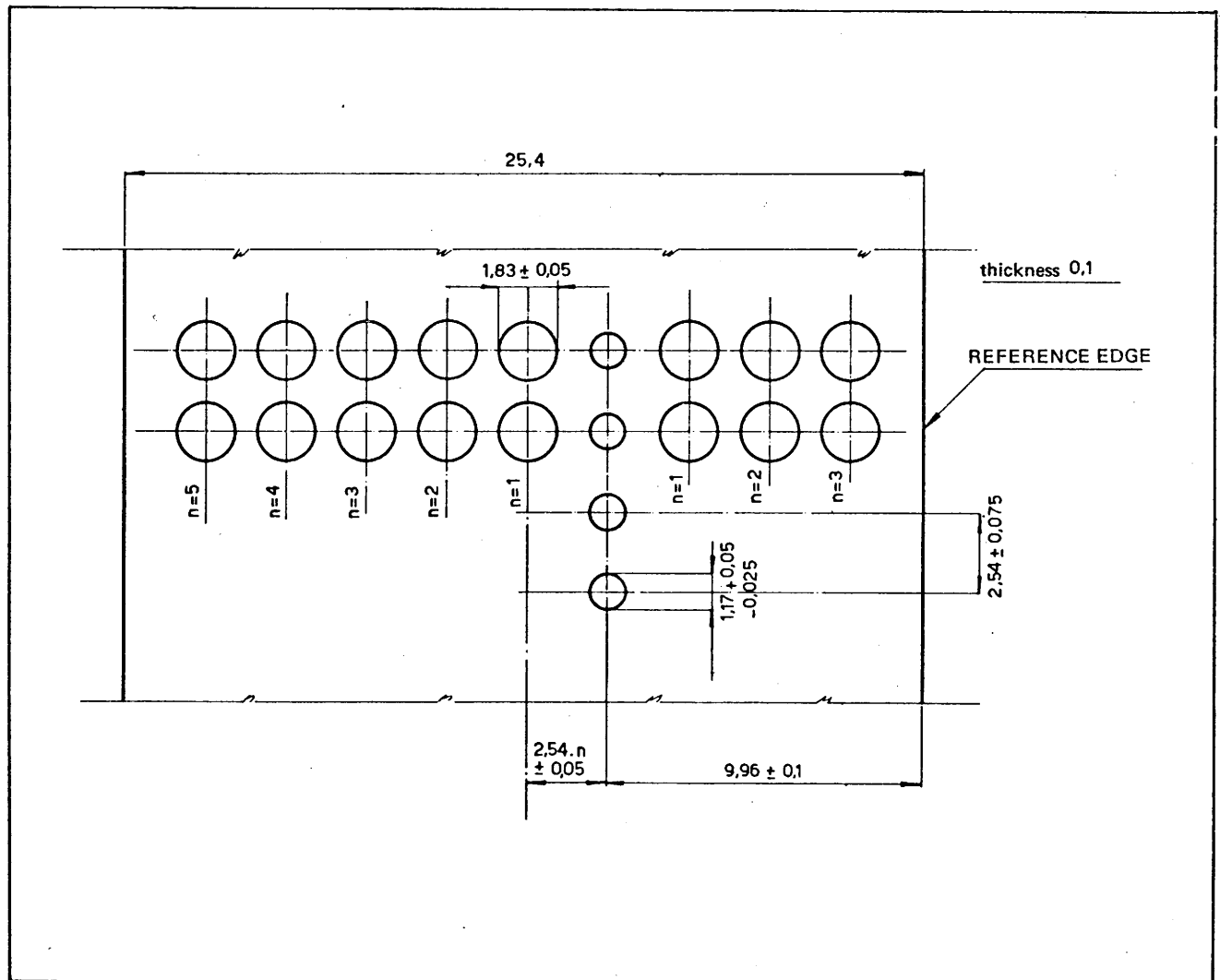
We list the most important specifications set by this document.

- Cumulative error on 10 spaces (1") (25.4 mm)
 $< \pm 0.01''$ (0.25 mm).

- Cumulative error on 50 spaces (5") (127 mm)
 $< \pm 0.025''$ (0.63 mm).

- Misalignment of holes in relation to edge $\pm 0.003''$ (0.075 mm).

All above dimensions refer to perforated tape with relative humidity of $50\% \pm 2\%$ and temperature of $23^\circ\text{C} \pm 2^\circ\text{C}$ ($73^\circ\text{F} \pm 4^\circ\text{F}$).



RIBBON

Any type of two-color typewriter ribbon can be used (or when a two-color print is not required), provided the inside hole of the spool has a 5 or 6 mm diameter (0.2"). Note that to reverse the movement of the ribbon, it is not required that the ribbon be equipped with clips at the two ends.

The following Olivetti ribbons are suggested for their typing quality and neatness of imprint:

- type 502 silk;
- type 505 nylon.

The 505 type is especially recommended for its lasting quality.

PAPER ROLLS

Single or multi-copy paper rolls may be used, provided they have the following dimensions:

- Width of sheet: from 210 mm to 241.3 mm (8.3" to 9.5").
- outside diameter of roll: up to 170 mm (6.7").
- Diameter of inside core: 25.4 mm $\pm$ 1.5 mm (1" $\pm$ 0.06").

The following Olivetti supplies are available:

- Single-copy paper rolls, width 210 mm (8.3"), code 3817110T.
- Two-copy sensitized paper rolls (without carbon paper), width 210 mm (8.3") code 3817125W.

PERFORATED FORMS FOR SPROCKET FEED PLATENS

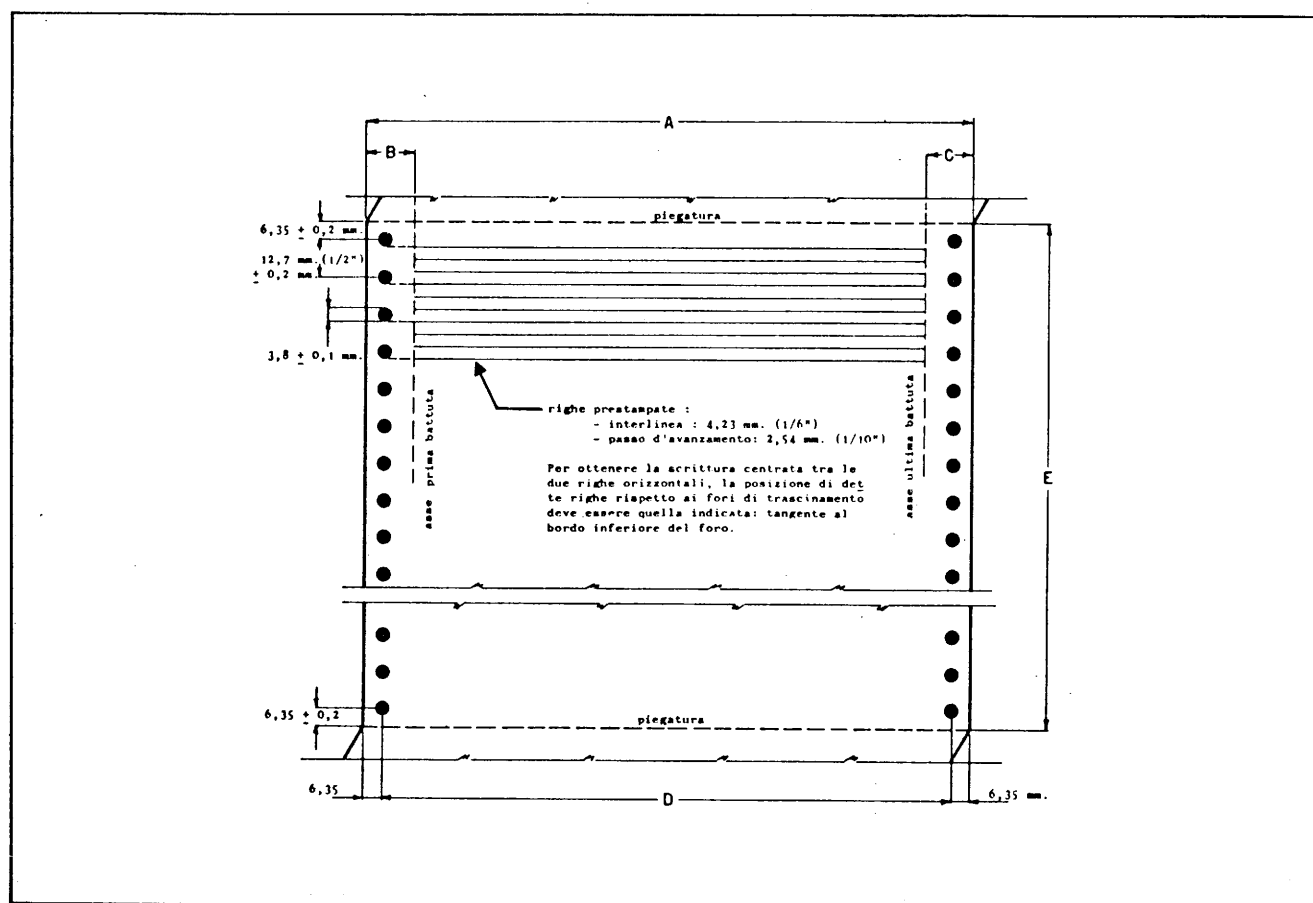
Batches of single or multi-copy forms with dimensions corresponding to the measurements listed in Figure 76 may be used.

- Length of forms (E): The only limitation is the capacity of the forms container (A 002),

i.e. maximum length 15" (381 mm). If we do not use the container, any length of forms may be used.

The following supplies are available in Olivetti stock:

- Width 8 1/2" (73 spaces), code 3865634S
- Width 9 1/2" (81 spaces), code 3865636A



	A	B	C	D
Platen for 72 strokes (R 02)	215,9 ± 0,5 mm (8½")	17,86 mm	15,16 mm	203,2 ± 0,2 mm (8")
Platen for 81 strokes (R 03)	241,3 ± 0,5 mm (9½")	17,86 mm	20,24 mm	228,6 ± 0,2 mm (9")